

# Home

An Argus Specialist Publication

# Computing WEEKLY

BIGGEST EVER ISSUE

No. 36  
Nov 8-14, 1983

38p

**FREE**

24-page  
computer  
buyers' guide

Software  
reviews for:  
Spectrum, BBC,  
Dragon,  
Commodore 64,  
Oric, Texas

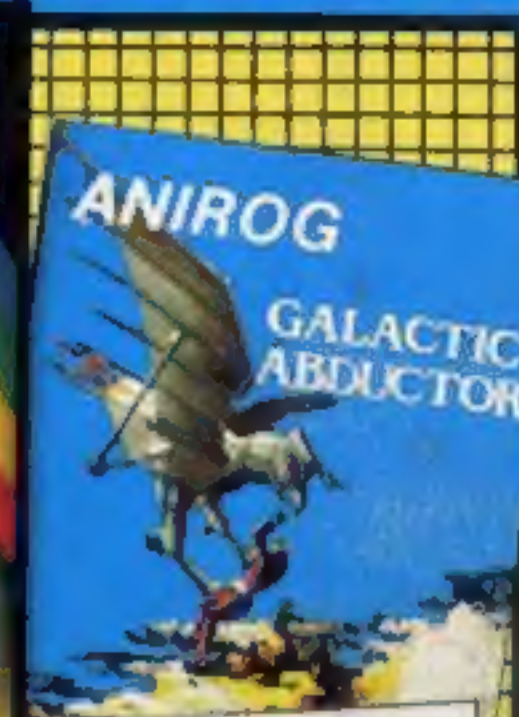
Make your  
VIC-20 make  
music

Turn your  
Dragon into a  
teacher

Making mazes  
with the ZX81

Programs to  
type in for:  
Spectrum,  
VIC-20, Dragon  
ZX81, Atari...

AND:  
your letters,  
U.S. Scene,  
software  
charts...



## Mine's a Spectrum and tonic

What's yours? Now, whatever you are drinking, a 48K Spectrum can help serve you faster.

It should also help ensure that you get the right change. The man who dreamed up the idea is 35-year-old Les Mercer, a former consultant on business computers.

He has designed a computerised cash register. Inside a black steel box is a Spectrum, ZX Printer and a 12 volt car battery — in case the mains fail — for use by pub staff.

The complete deal, including a black and white TV and a cassette recorder, costs £650.

Mr Mercer said the idea came to him when he was thinking of  
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## The Rabbit that roared

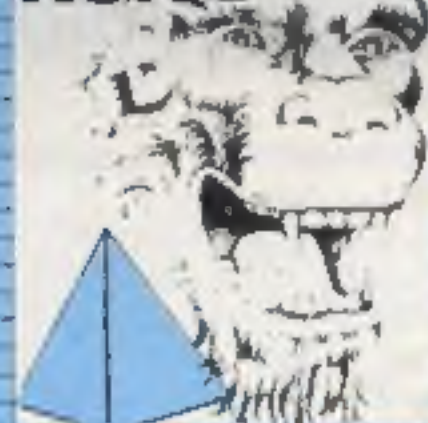
Software boss Alan Savage took a van to a firm of Mayfair solicitors — and dumped 4,000 computer game tapes.

It was all part of a dispute between Harrow-based Rabbit Software which had the UK franchise for eight games from Victory Software, of Pennsylvania.

Victory's solicitors, Offenbach and Co, say they began legal action because Rabbit had paid no royalties or given a statement of account.

*continued on page 5*

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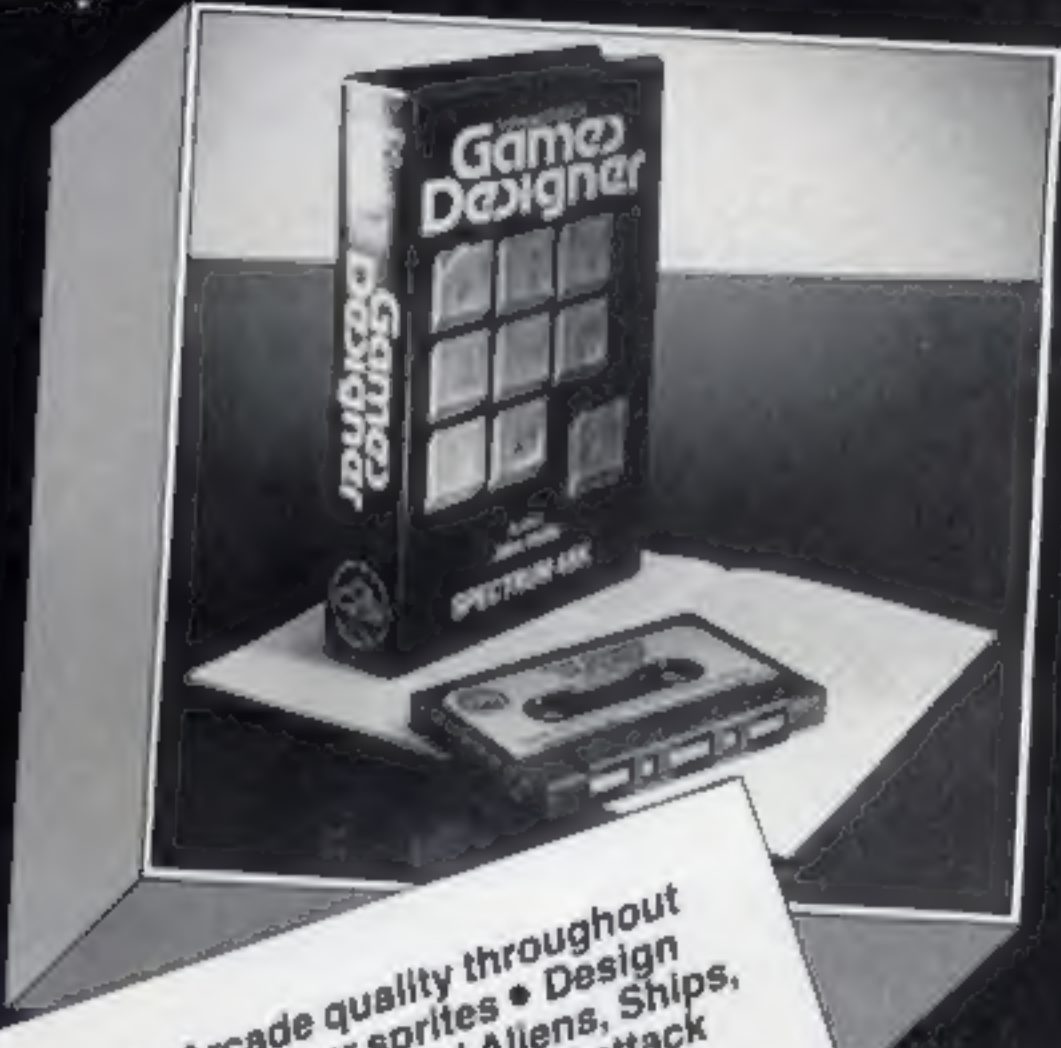
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**Winning ways with words**

Our readers are certainly good with words — the competition in issue No. 28 proves that.

We offered software prizes from A&F totalling £1,000 to entrants who made the most number of words out of the company's new titles, Chuckie Egg and Cylon Attack.

Several exceeded the 2,000 mark but many were not in the dictionary we specified, The Oxford Paperback Dictionary.

We said you could enter as many times as you wished — provided each entry was on the official coupon.

So Mr A.J. Wood, of Southampton, wins two prizes of £25-worth of software for his Spectrum. And two entries from the same address in Farnham, Surrey, means that J.A. and S.A. Flood each receive Spectrum software.

A&F Software is sending a 10 per cent discount voucher, redeemable by mail order only, to all entrants.

A&F is despatching the prizes and the vouchers to arrive within 28 days.

The complete list of winners: A.J. Wood (two prizes), of Southampton; J.A. and S.A. Flood, both of Farnham; Mrs A. Clarke, Carlisle; Les Gibbins, Plymouth; S.F. Rhodes, Auchleven; Douglas Anderson, Glasgow; Brian Gray, Corby; M.J. Trumper, Harrow; Barry Crook, Blackburn; Stephen Chattaway, Belvedere;

D. Howard, Trowbridge; Indrajit Advani, Southgate; Raymond Terry, Shoeburyness; Sue Osborne, Romney Marsh; R. Howell, South Shields; Neil French, Dartford; Steven Truville, Birmingham; Anna Goodfellow, Newcastle upon Tyne; John Moss, Coventry;

David Meredith, Portsmouth; Sean Kilvington, Saltburn; Roger Smith, Portsmouth; M.J. Swallow, Lowdham; B.P.A. Andrews-Howe, Swindon; Nigel Lowe, Ashton-under-Lyne; Michael Silve, Stoke Newington;

Mark Munro, Edinburgh; Miss S. Stoneman, Dawlish; Maurice Rodgers, Ballyninch; Anthony McDermott, near Chorley; Graham Furniss, Chesterfield; Mark Ashley, Frome; B. Bates, Gateshead; Simon Wharton, Ashby-de-la-Zouch; Henry Shades, Glasgow; Russell Whittington, Wigan; Mrs E. Dadd, near Wadhurst; Mrs Lesley Buchanan, Isle of Wight.

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**BUY THIS SPACE**  
To advertise your latest products! Ring Coleen or Barry on 01-437 1002 NOW!



Your Dragon can help youngsters sharpen up their English and arithmetic. Just type in the program that starts on page 11.



Play something, simply, with Alan Blackham's program for the VIC-20. Turn to page 22.



Mazes made easier on the ZX81. The program that does it begins on page 60.

In the centre of this week's Home Computing Weekly is a free 24-page guide to computers costing under £400. We plan to make your Christmas gift buying easier. Or you could leave it open around the house as a heavy hint . . .



# The REAL Challenge!

For your ORIC or SPECTRUM

**Jogger** Guide your joggers across a 4-lane motorway and cross the river to reach the safe haven through the gap in the fence. Each time a jogger is safely home more lorries and cars have to encounter more lorries and cars on the motorway but fewer crocodiles and logs in the river. Full on-screen instructions. Miccode sound effects and full action colour graphics.  
Author - Adrian Sheppard  
Oric 48K - £4.95 Spectrum 16/48K - £4.95.



**Quincy** A superb dice game for 2 to 6 players. 3 throws per go to try and score points by obtaining certain combinations i.e. 3 of a kind, a run, pairs etc. 13 go's to complete a game. The highest score is the winner. It's a game that is easy to learn but can be won by skilful and thoughtful play. Full colour graphics, on-screen instructions, bonus scores, etc.  
Author - Tony Charter  
Spectrum 48K - £4.95.



**Dinky Kong** Attempt to rescue your lovely girlfriend who is held captive by the angry gorilla. As you climb the connecting ladders and move along the gangways, the gorilla will be throwing bombs and fireworks at you! The only way to reach her is to leap over these obstacles and progress to the top. Miccode action with sound effects, full colour action graphics, skill levels, etc.  
Author - Adrian Sheppard  
Oric 48K - £4.95

**Grail** You have been chosen to seek and recover the Holy Grail from the Castle of Fens. Throughout the course of your task you will have to use your skill, intelligence and logic (along with a little luck) as you encounter many foes. You will have the opportunity to gather weapons and armour to fight with, but if you are wounded your strength will drain away - many other techniques such as warp, jewels, etc.  
Author - Mike Howard  
Oric 48K - £4.95.



**Oricade** A combined assembler/disassembler and editor for the Oric. Handles full 6502 Macromos. Features Save and Reload M.C. Assembles and disassembles at any address. An essential tool for any serious programmer.  
Author - Adrian Sheppard  
Oric 48K - £5.50.



One title recommended by ORIC PRODUCTS INT. LTD.  
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**Moria** A challenging adventure game set in the mines of Moria. You'll have to try and survive encounters with the monsters of middle-earth while trying to locate Durin's Ring. The Wizard and the Trader may help or hinder you on your journey to freedom - a game that will really test your character and staying power.  
Author - Mike Howard  
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All Oric titles available from Laskys.  
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## Pub Spectrum

From front page

how small shops could be helped by computers.

Business micros were out of the question because of the cost. And home computers had too little RAM memory for the thousands of products even smaller shops kept in stock, he said.

But pubs were ideal customers because most had 80 to 110 product lines, including items like crisps and sandwiches.

Mr Mercer said: "I did quite a bit of research from the customers' side of the bar. Whenever I was in a pub I started chatting to the landlord."

When you place an order at a pub equipped with a Spectrum cash till the barman/maid presses one or two keys and the drink and its price appears on the screen.

Big rounds can be catered for. In fact, one transaction can involve 20 different drinks, and 99 of each.

At the end of the day the landlord gets a sales and stock report from the printer. It can even tell him which staff sold most drinks.

It could show, for example, that the better-looking made more sales. He commented: "The landlord could then employ more bar staff that look like that. After all, he who pays the piper calls the tune."

The difficulty he faced was convincing publicans that his £650 system was as good as sophisticated purpose-made tills costing around £3,000.

He said: "It's a bit like standing on a street corner selling £5 notes for £2 each. It's the old story, no-one believes you. They say: 'Computers? I'm sure they won't fit in with my system.'"

Landlord John McManus, of The Gloucester, West Croydon, has had one of the Spectrum tills



There's a Spectrum inside this new-style cash till for pubs

on test for a few weeks and — after staff training — was due to "go live" today.

He said: "It's tremendous and everyone will be able to adjust to it. I had to replace my three tills and they would have cost at least £1,000 each. This system for three bars will cost me a total of £1,600."

Mr Mercer and his wife Sue, co-directors of Mercer Computer Systems, have been marketing the Spectrum till since January. Mr Mercer reckons the 40½K BASIC program took him the equivalent of 1¼ years to write.

The couple's daughter, Pamela, aged 3½, helped to test it. He said: "We handed it over to her for destruction testing and she hasn't been able to break it yet."

In fact, the unit has a clear plastic cover over the Spectrum keyboard to avoid that age-old pub problem — spilled drinks.

*Mercer Computer Systems, 22 Baird Road, Farnborough, Hants GU14 8BP*

## Oric makes a quick recovery

Production of the Oric is nearly back to normal after the recent fire that destroyed nearly 7,500 machines. The fire was at Oric's main production plant at Kenure Plastics in Feltham.

But according to Oric's MD Barry Muncaster, production was up and running again by 2 o'clock on the day following the fire.

Mr Muncaster said: "The Oric used to be made in Kenure's main plant, but then we moved it to their new factory over the road, and that was the one affected by the fire."

"Fortunately, the moulds needed to make the cases were

still secure in the old building.

"We should be back on target by the second week in November, thanks to staff working overtime to make good the losses. People have been beavering away at weekends making new labels and stuff."

"Our main problem is not so much the fire — it's that orders have been coming in faster than we expected. From October to December we have orders for 130,000 units."

"The High Street shops wait until the last minute to place their orders rather than ordering well ahead — they don't have any comprehension of the problems of producing home computers."

"It isn't like making ordinary electrical goods — some components have a lead time of 26 weeks."

## Games dispute

From front page

But then Rabbit stopped marketing the games and Rabbit director Mr Savage delivered the remaining 4,000.

Mr Savage said his company had distributed four VIC-20 games out of the eight and there were programming faults in three of them.

He said: "It's a very sore point with us. There were eight games and we could only get four working. They did not provide us with bug-free versions."

"We withheld the royalties as a lever. Now we are beginning an action for loss of profit."

"I did not think there was much we could do in the courts over there because of the cost. But we are very pleased that Offenbach has brought the action to this side of the Atlantic because we were going to let it go."

"I don't know what the solicitors are going to do with all those tapes. It's mildly amusing."

The four titles which Rabbit marketed were the arcade game Annihilator and three adventures, Grave Robbers and Ad-

venture Pack 1 and Adventure Pack 2.

Rabbit says that the three adventures had bugs, but only at the higher levels which meant they were not spotted until dealers began returning them. Rabbit replaced them with its own titles.

Victory's main action, still to be heard, claims royalties on sales, subject to Rabbit's accounts.

Meanwhile, the UK, European and Scandinavian rights to Annihilator have been acquired by newcomers Mogul Software which says it is planning to "rush-release" the game.

A US best seller, it will cost £5.99 for both the VIC-20 and the Commodore 64.

Coincidentally, one of the directors of Mogul is the general secretary of the Computer Trade Association, Nigel Backhurst.

Rabbit is bringing out a game called Protector, which Mr Savage described as an enhanced version of the Defender-style arcade games.

*Rabbit Software, 380 Station Road, Harrow, Middx. HA1 2DE*

*Mogul Software, 90 Regent Street, London W1R 5PA*

## LOOKING FOR SPARE TIME EARNINGS?

Then why not sell software to your friends and workmates.

There are probably hundreds of micro users in your area looking for software who are wary of mail order and cannot find a local dealer. You can become that local dealer.

We are looking for agents in all areas to sell software for the Spectrum, ZX81, VIC-20, CBM 64, BBC, Dragon, Atari, Oric 1 and Lynx. All the latest titles in stock. Write now for full details or telephone if you prefer.

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## TI: users hit out

Users of TI's home computer — which goes out of production this month — are blaming the company for a series of failings.

They say the TI-99/4A, first out here two years ago, should have been updated to fight off newer computers, marketing and advertising was not strong enough and that software companies, user groups and dealers had difficulty getting information out of TI.

Several, however, said it came as no surprise that Texas Instruments, in Dallas, announced that home computer production was

to end.

The company stressed that it would continue making higher-priced business computers.

It has pulled out of home computers because of growing losses. Third quarter figures show a loss of £66.8m after the £200.4m it will cost to close down the home computer side.

It will mean bargains for some computer buyers, for TI is cutting the price of remaining stocks to clear them off the shelves.

Author and ex-official of the old group, Pete Brooks, said: "TI didn't do themselves any favours. Information was always scarce. They refused to discuss any of the bugs — they refused to acknowledge that there were any. And it was 18 months before they responded to the market and brought the price down.

Stephen Shaw, head of TI specialists Stainless Software, said: "I've been expecting this ever since it came out — their marketing is so atrocious. I think it's a damn good computer; there's nothing to touch it. The processor is marvellous and can you think of any other computer that can sing?"

Vince Apps, of Apex Software, said: "I'm annoyed. I didn't think they would do it so suddenly. It was a bit of a shock. I thought they would hang on for about 18 months and bring out a new machine."

At the company's UK headquarters in Bedford, Richard Mann, for TI, denied claims that TI failed to help third party software companies, pointing to deals with Milton Bradley and Fox.

TI would continue servicing support, including warranty work, "indefinitely." The company was still servicing watches and they went out of production three to four years ago.

Texas Instruments, Manton lane, Bedford MK41 7PA

## Cash on cartridge

Richard Shepherd, best known for his adventure tapes, is determined to be the first with a program designed for the new Spectrum Microdrive.

He is adding new features to a bank account program called Cash Controller, including an option to save both program and data onto the Microdrive's tiny cartridges.

Mr Shepherd, a certified accountant before starting Richard Shepherd Software with his wife Elaine, said that at present Cash Controller took 2½ minutes to load and a similar amount of time to load the data.

This would be cut to 10-20 seconds using a Microdrive.

Cash Controller, the company's only non-adventure program, costs £9.95 on cassette and would be priced at around £14.95 on cartridge.

The new version, now being worked on, will increase the number of budget headings from eight to take account of the extra storage.

Richard Shepherd Software, Elm House, 23-25 Elmshott Lane, Cippenham, Slough, Berks

THE  
 OMEGA  
 RUN  
 . . . . is coming

# Computer dating à la modem

*This week's leader amounts to nothing less than the announcement of the most off-beat computer bulletin board system (CBBS) that I have ever heard of.*

*Not that I am surprised at its existence; actually I am surprised that it took so long to be created. What I am talking about is nothing less than a computer bulletin board called (readily?) Dial-A-Match.*

*You guessed it. A CBBS for the lovelorn. Created by a gentleman named Gregg Collins, dialling the number in Los Angeles (where else?) can put you in touch with people in a similar predicament from all over the country — even from all over the world!*

*It's true. As documented by Mr Collins himself, affairs are being arranged, spouses are being cheated upon, gay lovers are being introduced to each other, and all via modem and CBBS. Amazing.*

*If you want (or need) more information, call (213) 840-8211, in beautiful downtown Burbank. No computer necessary to call for information.*



*When it rains it pours department. I mentioned in an earlier column that I had finally encountered a decent word processing program for the VIC. Well, this week I have found one that also comes highly recommended.*

*It is called Wordcraft 20 and comes from the makers of the already successful Wordcraft Ultra. Compared with its big brother, the junior version is no slouch. It comes with an extensive list of commands, is easy to use, versatile, and takes good advantage of the color capabilities of the VIC.*

*It is a screen based processor, which means that what you see on the screen is what will be printed by the printer. I feel this is the best type of processor. Especially for people like me who have trouble visualizing things.*

*The processor has two modes, one for the entering of text and the other for entering formatting commands. Either can be entered by a single keystroke.*

*Instead of cluttering up the screen with command lists and/or help screens, you must learn all the commands. This should not prove too difficult as the commands are mnemonic, and most of us tend to use the same commands frequently.*

*For assistance, the top three or so lines on the screen list where you are in the document, and what the processor thinks you are doing.*

*Since the VIC cannot display 80 columns, and the processor can handle up to 99 characters, the screen will automatically scroll horizontally as the 25th character is typed. Otherwise, the screen width can be set at 23 columns to prevent scrolling while entering text, then reset to full width prior to printing.*

*In addition to the regular version, an optional version is available with 8K of RAM built into the program cartridge. This extra memory is necessary if you plan on doing any serious writing, other than short letters. If you have already expanded your VIC above minimum memory, you will not need the optional version.*

*The manual is 31 pages long, well laid out, easy to read and understand, and includes a tutorial that should get you up and running within an hour or two. The program is written in assembly and is therefore a fast runner.*

*This may be more value for the money than Quick Brown Fox, but it also costs more. The regular version costs \$99.95 with the 8K RAM version costing \$100 more. In the UK contact: Audiogenic, 34-36 Crown Street, Reading, Berks (0734) 586334.*

*Guess what? Out of space again! See you next week.*

Bud Izen

Fairfield, California.



## BEST SELLERS

# Top 30

|    |                         |                  |          |
|----|-------------------------|------------------|----------|
| 1  | Manic Miner             | Bug Byte         | Spectrum |
| 2  | Jet Pac                 | Ultimate         | Spectrum |
| 3  | Trans-Am                | Ultimate         | Spectrum |
| 4  | Cookie                  | Ultimate         | Spectrum |
| 5  | 3D Combat Zone          | Artic            | Spectrum |
| 6  | Zzoom                   | Imagine          | Spectrum |
| 7  | Chuckie Egg             | A & F            | Spectrum |
| 8  | Johnny Reb              | Lothlorien       | Spectrum |
| 9  | Krazy Kong              | Anirog           | VIC-20   |
| 10 | Horace Goes Skiing      | Psion            | Spectrum |
| 11 | Pssst                   | Ultimate         | Spectrum |
| 12 | Cuthbert in the Jungle  | Microdeal        | Dragon   |
| 13 | Penetrator              | Melbourne House  | Spectrum |
| 14 | Frogger                 | Microdeal        | Spectrum |
| 15 | Cuthbert Goes Walkabout | Microdeal        | Dragon   |
| 16 | Frogger                 | C-Tech           | BBC      |
| 17 | Space Shuttle           | Microdeal        | Dragon   |
| 18 | Splat                   | Incentive        | Spectrum |
| 19 | Gold Mine               | dk'tronics       | Spectrum |
| 20 | Labyrinth               | Commodore        | CBM 64   |
| 21 | Intergalactic Force     | Microdeal        | Dragon   |
| 22 | Hall of the Things      | Crystal          | Spectrum |
| 23 | Horace and the Spiders  | Psion            | Spectrum |
| 24 | Redweed                 | Lothlorien       | Spectrum |
| 25 | Jumpin' Jack            | Imagine          | Spectrum |
| 26 | Kong                    | Ocean            | Spectrum |
| 27 | Hunchback               | Superior         | BBC      |
| 28 | Devils of the Deep      | Richard Shepherd | Spectrum |
| 29 | Sargon Chess            | Commodore        | VIC-20   |
| 30 | Dungeon Master          | Crystal          | Spectrum |

Compiled by PCS Distribution (0254 691211) and sanctioned by the Computer Trade Association. Chart is for retail sales in individual outlets in the UK and Northern Ireland for the fortnight ended October 22

### Top Ten programs for the Spectrum

|    |                   |                |
|----|-------------------|----------------|
| 1  | Flight Simulation | Psion (3)      |
| 2  | Lunar Jetman      | Ultimate (-)   |
| 3  | Kong              | Ocean (8)      |
| 4  | Zzoom             | Imagine (1)    |
| 5  | Ant Attack        | Quicksilva (-) |
| 6  | Pool              | CBS (-)        |
| 7  | Trans-Am          | Ultimate (7)   |
| 8  | Zip-Zap           | Imagine (7)    |
| 9  | Bugaboo           | Quicksilva (-) |
| 10 | Pssst             | Ultimate (6)   |

Compiled by W.H. Smith. Figures in brackets are last week's positions

### Top Ten programs for the Commodore 64

|    |                             |                     |
|----|-----------------------------|---------------------|
| 1  | Hungry Horace               | Melbourne House (-) |
| 2  | Matrix                      | Llamasoft (-)       |
| 3  | Scramble                    | Interceptor (7)     |
| 4  | SpriteMan                   | Interceptor (-)     |
| 5  | Grand Master Chess          | Audiogenic (9)      |
| 6  | Hover Boyver                | Llamasoft (1)       |
| 7  | Attack of the Mutant Camels | Llamasoft (2)       |
| 8  | Frogger                     | Interceptor (3)     |
| 9  | Escape MCP                  | Rabbit (4)          |
| 10 | Motor Mania                 | Audiogenic (5)      |

Compiled by Boots. Figures in brackets are last week's positions

### Top Ten programs for the VIC-20

|    |                |                |
|----|----------------|----------------|
| 1  | Gridrunner     | Llamasoft (1)  |
| 2  | Arcadia        | Imagine (2)    |
| 3  | Wacky Waiters  | Imagine (4)    |
| 4  | Catcha Snatcha | Imagine (3)    |
| 5  | Laser Zone     | Llamasoft (-)  |
| 6  | Escape MCP     | Rabbit (-)     |
| 7  | Abductor       | Llamasoft (-)  |
| 8  | Paratroopers   | Rabbit (-)     |
| 9  | Frantic        | Imagine (-)    |
| 10 | Bonzo          | Audiogenic (6) |

Compiled by Boots. Figures in brackets are last week's positions

### Top Ten programs for the Dragon

|    |                         |                |
|----|-------------------------|----------------|
| 1  | Android Attack          | Microdeal (3)  |
| 2  | Mined Out               | Quicksilva (9) |
| 3  | The King                | Microdeal (-)  |
| 4  | Cuthbert Goes Walkabout | Microdeal (4)  |
| 5  | Frogger                 | Microdeal (-)  |
| 6  | Ring of Darkness        | Wintersoft (2) |
| 7  | Space War               | Microdeal (5)  |
| 8  | Wizard War              | Salamander (-) |
| 9  | Katerpillar Attack      | Microdeal (-)  |
| 10 | Dragon Trek             | Salamander (-) |

Compiled by Boots. Figures in brackets are last week's positions

### Top Ten programs for the ZX81

|    |                   |                |
|----|-------------------|----------------|
| 1  | Football Manager  | Addictive (1)  |
| 2  | Flight Simulation | Sinclair (2)   |
| 3  | Space Raiders     | Sinclair (4)   |
| 4  | Espionage Island  | Sinclair (3)   |
| 5  | Scramble          | Quicksilva (5) |
| 6  | 1K Games          | Sinclair (6)   |
| 7  | Ship of Doom      | Sinclair (8)   |
| 8  | 1K Chess          | Sinclair (7)   |
| 9  | Fantasy Games     | Sinclair (10)  |
| 10 | Defender          | Quicksilva (9) |

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£99.95  
48k. £129.95

|                            |        |
|----------------------------|--------|
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| Aquarius Iron              | £11.95 |
| Sinclair Flight Simulation | £7.95  |





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# DRAGON PROGRAMS

```

1000  PRINT "WELCOME TO THE DRAGON PROGRAM"
1010  INPUT "NAME: "; N$
1020  INPUT "AGE: "; A$
1030  INPUT "SEX: "; S$
1040  INPUT "HAIR: "; H$
1050  INPUT "EYES: "; E$
1060  INPUT "WEIGHT: "; W$
1070  INPUT "HEIGHT: "; HT$
1080  INPUT "FAVORITE COLOR: "; C$
1090  INPUT "FAVORITE FOOD: "; F$
1100  INPUT "FAVORITE MUSIC: "; M$
1110  INPUT "FAVORITE TV SHOW: "; T$
1120  INPUT "FAVORITE MOVIE: "; V$
1130  INPUT "FAVORITE SPORT: "; SP$
1140  INPUT "FAVORITE GAME: "; G$
1150  INPUT "FAVORITE BOOK: "; B$
1160  INPUT "FAVORITE TOY: "; TO$
1170  INPUT "FAVORITE ANIMAL: "; AN$
1180  INPUT "FAVORITE PLANT: "; PL$
1190  INPUT "FAVORITE WEAPON: "; WE$
1200  INPUT "FAVORITE TOOL: "; TOO$
1210  INPUT "FAVORITE INSTRUMENT: "; IN$
1220  INPUT "FAVORITE GAME: "; G2$
1230  INPUT "FAVORITE SPORT: "; SP2$
1240  INPUT "FAVORITE MOVIE: "; V2$
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1260  INPUT "FAVORITE MUSIC: "; M2$
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1280  INPUT "FAVORITE COLOR: "; C2$
1290  INPUT "FAVORITE HEIGHT: "; HT2$
1300  INPUT "FAVORITE WEIGHT: "; W2$
1310  INPUT "FAVORITE EYES: "; E2$
1320  INPUT "FAVORITE HAIR: "; H2$
1330  INPUT "FAVORITE SEX: "; S2$
1340  INPUT "FAVORITE AGE: "; A2$
1350  INPUT "FAVORITE NAME: "; N2$
1360  PRINT "THANK YOU FOR PLAYING THE DRAGON PROGRAM"
1370  PRINT "BYE BYE"
1380  END
    
```

```

1000  PRINT "WELCOME TO THE DRAGON PROGRAM"
1010  INPUT "NAME: "; N$
1020  INPUT "AGE: "; A$
1030  INPUT "SEX: "; S$
1040  INPUT "HAIR: "; H$
1050  INPUT "EYES: "; E$
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1320  INPUT "FAVORITE HAIR: "; H2$
1330  INPUT "FAVORITE SEX: "; S2$
1340  INPUT "FAVORITE AGE: "; A2$
1350  INPUT "FAVORITE NAME: "; N2$
1360  PRINT "THANK YOU FOR PLAYING THE DRAGON PROGRAM"
1370  PRINT "BYE BYE"
1380  END
    
```

**Opposites** tests a child's knowledge of words and the corresponding words that have an opposite meaning. It works by getting a word from a list and printing its opposite.

```

1000  PRINT "WELCOME TO THE OPPOSITES PROGRAM"
1010  INPUT "NAME: "; N$
1020  INPUT "AGE: "; A$
1030  INPUT "SEX: "; S$
1040  INPUT "HAIR: "; H$
1050  INPUT "EYES: "; E$
1060  INPUT "WEIGHT: "; W$
1070  INPUT "HEIGHT: "; HT$
1080  INPUT "FAVORITE COLOR: "; C$
1090  INPUT "FAVORITE FOOD: "; F$
1100  INPUT "FAVORITE MUSIC: "; M$
1110  INPUT "FAVORITE TV SHOW: "; T$
1120  INPUT "FAVORITE MOVIE: "; V$
1130  INPUT "FAVORITE SPORT: "; SP$
1140  INPUT "FAVORITE GAME: "; G$
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1240  INPUT "FAVORITE MOVIE: "; V2$
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1270  INPUT "FAVORITE FOOD: "; F2$
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1300  INPUT "FAVORITE WEIGHT: "; W2$
1310  INPUT "FAVORITE EYES: "; E2$
1320  INPUT "FAVORITE HAIR: "; H2$
1330  INPUT "FAVORITE SEX: "; S2$
1340  INPUT "FAVORITE AGE: "; A2$
1350  INPUT "FAVORITE NAME: "; N2$
1360  PRINT "THANK YOU FOR PLAYING THE OPPOSITES PROGRAM"
1370  PRINT "BYE BYE"
1380  END
    
```

**How it works**  
 10 clears string space  
 20 dimensions arrays  
 30 reads word data into arrays  
 40-70 generates depression code  
 80-100 prints data base names  
 100-200 prints score and asks if another test is required  
 210-220 DATA containing words  
 230 prints appropriate month, i.e. smile/frown

```

1000  PRINT "WELCOME TO THE OPPOSITES PROGRAM"
1010  INPUT "NAME: "; N$
1020  INPUT "AGE: "; A$
1030  INPUT "SEX: "; S$
1040  INPUT "HAIR: "; H$
1050  INPUT "EYES: "; E$
1060  INPUT "WEIGHT: "; W$
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1330  INPUT "FAVORITE SEX: "; S2$
1340  INPUT "FAVORITE AGE: "; A2$
1350  INPUT "FAVORITE NAME: "; N2$
1360  PRINT "THANK YOU FOR PLAYING THE OPPOSITES PROGRAM"
1370  PRINT "BYE BYE"
1380  END
    
```

**Hints on conversion**  
 Converting this should be a fairly simple process, as the characters used to create the smiling face can be found on nearly all micros. The rest of this program uses simple, although effective, string handling, the equivalent of which can be found on any machine. Also note what I said previously about the random number routine.

The final program should be of a level and to one who would like to see the output of the program from the conventional.

**Variables**  
 10-15 string arrays  
 20-30 string arrays  
 40-50 loop counters  
 60-70 string  
 80-90 word randomly chosen corresponding opposite in put word

```

1000  PRINT "WELCOME TO THE OPPOSITES PROGRAM"
1010  INPUT "NAME: "; N$
1020  INPUT "AGE: "; A$
1030  INPUT "SEX: "; S$
1040  INPUT "HAIR: "; H$
1050  INPUT "EYES: "; E$
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1120  INPUT "FAVORITE MOVIE: "; V$
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1320  INPUT "FAVORITE HAIR: "; H2$
1330  INPUT "FAVORITE SEX: "; S2$
1340  INPUT "FAVORITE AGE: "; A2$
1350  INPUT "FAVORITE NAME: "; N2$
1360  PRINT "THANK YOU FOR PLAYING THE OPPOSITES PROGRAM"
1370  PRINT "BYE BYE"
1380  END
    
```

**Number Systems**  
 This program converts a number from one base to another. It works by getting a number and a base and then printing the converted number.

**How it works**  
 10 clear string space and dimension array  
 20-70 menu  
 80-310 explanation of number systems  
 320-400 number system test

**Variables**  
 P,AN input variables  
 C 2 loop counter  
 B1,N1 random numbers  
 C,A,J6,M5 all used in line 420 as part of a formula for base conversion  
 SC score

```

1000  PRINT "WELCOME TO THE NUMBER SYSTEMS PROGRAM"
1010  INPUT "NAME: "; N$
1020  INPUT "AGE: "; A$
1030  INPUT "SEX: "; S$
1040  INPUT "HAIR: "; H$
1050  INPUT "EYES: "; E$
1060  INPUT "WEIGHT: "; W$
1070  INPUT "HEIGHT: "; HT$
1080  INPUT "FAVORITE COLOR: "; C$
1090  INPUT "FAVORITE FOOD: "; F$
1100  INPUT "FAVORITE MUSIC: "; M$
1110  INPUT "FAVORITE TV SHOW: "; T$
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1300  INPUT "FAVORITE WEIGHT: "; W2$
1310  INPUT "FAVORITE EYES: "; E2$
1320  INPUT "FAVORITE HAIR: "; H2$
1330  INPUT "FAVORITE SEX: "; S2$
1340  INPUT "FAVORITE AGE: "; A2$
1350  INPUT "FAVORITE NAME: "; N2$
1360  PRINT "THANK YOU FOR PLAYING THE NUMBER SYSTEMS PROGRAM"
1370  PRINT "BYE BYE"
1380  END
    
```

**Hints on conversion**  
 Examine the formula I have used to change a number from one base to another, as this forms the heart of the program and perform the necessary changes to make it work on your micro. Once you have done this the remaining code is fairly standard. Musical effects in any of the above use the PLAY command which has several parameters. It has octave, tempo, note length, volume and note name (B is the note B, B- is B flat). If apart from the note name is omitted then a default value is used. You will have to use this base account when converting to other micros.

The final program should be of a level and to one who would like to see the output of the program from the conventional.



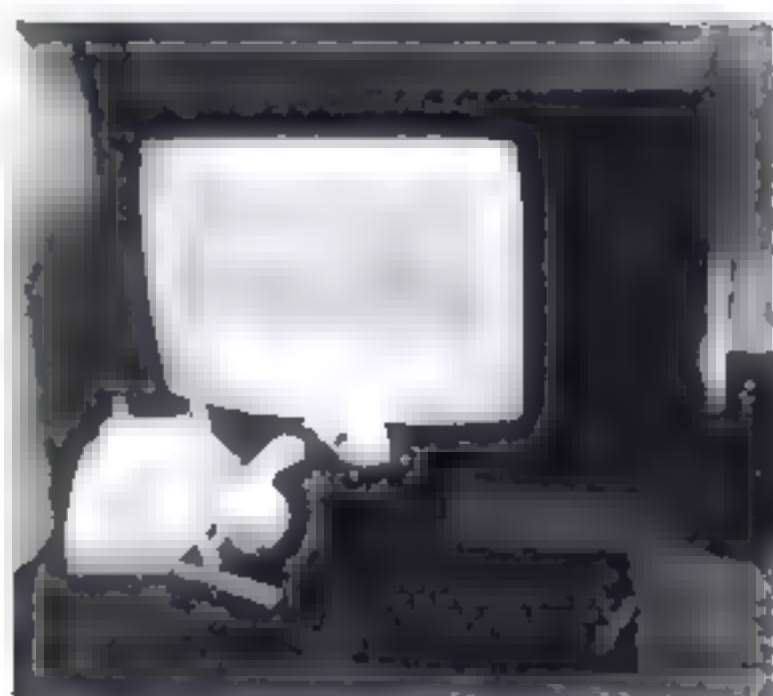




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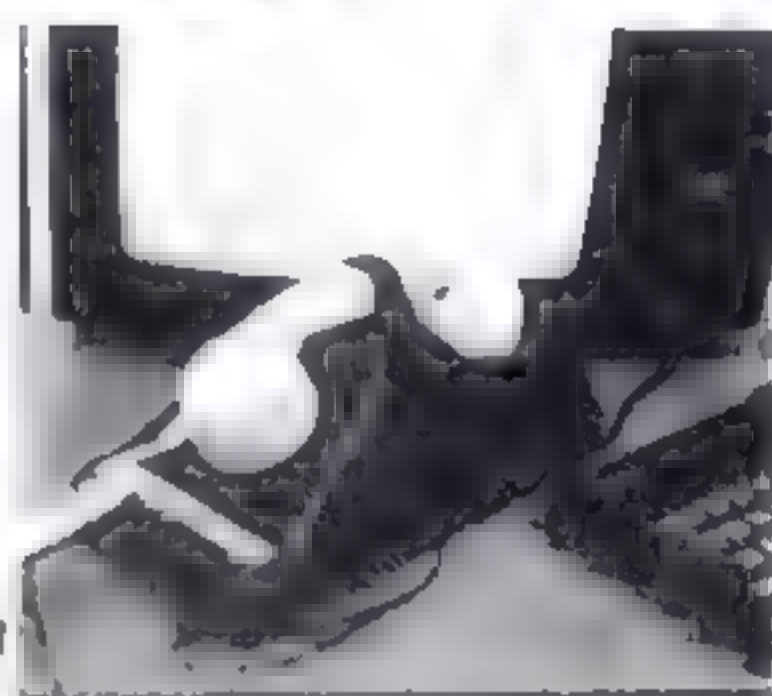


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# DRAGON

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*Personnel Computing News*

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# Games of skill and chance

These programs will turn your micro into a fruit machine, pinball table, and more. Interested? See what our reviewers thought of them

## Romik Cube Dragon £9.99

Romik Software 272 Argyl Avenue, Slough Berks

Everyone has heard of the infamous Rubik's Cube, that frustrating cube of plastic that became a national craze last year.

Well, Romik has brought out its own version for the Dragon.

The cube is well depicted on the screen and overcomes the Dragon's four-colour graphics severely. The program is in machine code and provides very fast 'twist' graphics in response to one of the long list of commands.

There are two other games on the cassette, if you find the standard cube too easy. The first one

is a timed cube which changes the side's colour if you do not complete it quickly. The harder game is the 4D cube, an infuriating brain twister which I have yet to solve.

The actual game is a good one, extremely well implemented on a computer not really suited for it.

However, who wants to fiddle with the cube nowadays? Its interest has seemed to pass and Romik's version for the Dragon with the long list of instructions seems of little extra interest.

The game is exorbitantly priced at ten quid, a price which makes it hardly worth considering.

|                 |     |
|-----------------|-----|
| instructions    | 60% |
| playability     | 35% |
| graphics        | 70% |
| value for money | 10% |



## Flippit Spectrum £9.95

Sinclair Research 25 Willis Road, Cambridge CB1 2AQ

This game, written for Sinclair, is a cross between Rubik's cube and a magic square.

The program responds very quickly to your commands as you should expect.

When loaded, you are shown a large square made up of nine smaller squares. Each of the smaller ones has a number between zero and three in the corners and it is your task to move them or flip over these tiles so that each row and column plus the two diagonals add up to nine.

This is not as simple as it sounds — there are supposed to be millions of combinations.

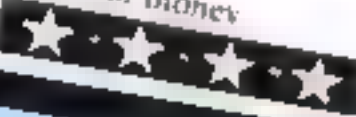
The graphic display while being easy to read is not very exciting but it is hard to see what else could be done to make it so.

A record of moves is kept and if playing competitively your opponent's target is displayed and the tiles are set back to their original positions.

When or if you solve the puzzle, the pieces turn red and a musical trail sounds. If you manage to beat your opponent the harder flashes too. I haven't managed to test this yet!

The tape comes attractively boxed with a user manual, but I feel that it would have been better to do away with the packaging for a lower price.

|                 |      |
|-----------------|------|
| instructions    | 100% |
| playability     | 85%  |
| graphics        | 70%  |
| value for money | 70%  |



## Challenge Spectrum £5.95

Temptation Software, 27 Cinque Ports Street, Rye, Sussex

Challenge brings you two well known games. Mastercode deluxe is simply Mastermind (no, not the one with Magnus Magnusson).

For the cave-dwellers amongst you, one must use logic to guess the colours and sequence of four pegs. The computer indicates which pegs were right at each guess, so you go on to deduce the correct code.

Of course, you can also enter a code for your silicon enemy to guess. There are two skill levels.

The screen display is effective but the game suffers from being

written in BASIC — if you mark the computer's answer wrongly, there will be a lengthy pause!

Higher and Lower is a game from a TV show compered by Bruce Forsyth. You are given a card and you have to say whether the next card is higher or lower.

Guess wrongly and you lose money, but guess correctly four times and you collect a golden payoff. You can also gamble your winnings in the chance of a bigger jackpot.

It's colourful, and the graphics are realistic, but somehow it lacks real excitement.

|                 |      |
|-----------------|------|
| instructions    | 100% |
| playability     | 70%  |
| graphics        | 70%  |
| value for money | 60%  |



## Pinball Arcade 32K BBC £10.35

Kansas City Systems, Unit 3, Sutton Springs Wood, Chester

If you are a real pinball wizard then this program will certainly help tune up those flipper fingers. Not only can you play a mean game but you can actually design the table yourself!

The instructions look rather shoddy but they are quite adequate.

Setting up a new table involves picking up various shapes, representing the bumpers and buzzers, and placing them anywhere on the table. The selection of shapes is impressive.

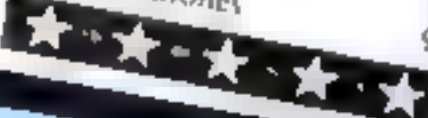
The score for each bumper and the tilt of the table can be selected together with the strength of the flippers.

Control of the program, except the actual play, is achieved with the cursor keys and the space bar — absolute child's play.

The play itself uses two keys for the flippers and the space bar to compress the spring — the longer the space bar is held, the stronger the spring. The action is fast and furious with very realistic sound effects and good graphics.

Naturally the highest score is retained and the whole table can be saved though the score is then lost. Unfortunately, you cannot choose the name of the saved database.

|                 |      |
|-----------------|------|
| instructions    | J.P. |
| playability     | 70%  |
| graphics        | 90%  |
| value for money | 96%  |
|                 | 95%  |



## Las Vegas Spectrum £5.95

Temptation Software, 27 Cinque Ports Street, Rye, Sussex

For addicts of the one-armed bandit, this will prove an enjoyable tape featuring as the insert states "a full feature pinball machine". And so it is, complete with holds, nudges and gamble.

The machine is well laid out and easy to understand and the symbols spin extremely well, making good use of the Spectrum's graphics. With £10 to gamble away at 10p a go, you can gamble away to your heart's content.

Also on the tape is another old favourite, Blackjack. Although the cards are dealt in a strange way this is a good representation

of the game which plays according to Hoyie — although I did have my doubts about the dealer with some of his turn-ups.

I don't know the rules governing this sort of thing but I struck me that it may be a good idea to show for school fees to raise funds.

My only criticism is that when you finish playing Fruit Machine, there is no routine to let you load Blackjack without BREAKing the program, and there are no instructions to tell you how to load the second game without going through the first.

|                 |     |
|-----------------|-----|
| instructions    | 80% |
| playability     | 90% |
| graphics        | 95% |
| value for money | 90% |





in the bad old days, writing music on the VIC-20 was slow and boring. But now those days have gone, thanks to my Music Aid program.

The program starts by displaying a musical stave with letters in place of the positions of the notes. You find the note you want and enter the appropriate note.

When you have entered all the notes you want, you then press the back arrow on the top left of the keyboard, and go on to enter the spacing and timing by pressing the space bar. If you go wrong, just press the back arrow and you can start again.

After all that, you can listen to your creation, and that's what you want. You can't be doing a lot of

#### How it works

20-30 print some instructions  
40-195 prints the notes available  
200-295 enter the notes  
300-400 input the timing  
500-595 let you hear the tune  
600-690 enter your options  
700-900 list the data  
900-990 is the end of the program  
990-9970 wait for key to be pressed  
9100-9160 invalid input and  
4000-4040 data for the notes

#### Hints on conversion

This program would be quite hard to convert to another micro because it uses a lot of commands and POKEs only the VIC has.  
POKE 36879 screen colour  
POKE 36874 — 36877 sound channels  
POKE 198,0 clear keyboard buffer  
SYS 6402 erase program  
TIS real time clock  
T timer updated every 60th of a second

# Play something, simply

This Music Aid program by Alan Blackham takes the blood, sweat and tears out of making music on your VIC-20

```

10 POKE 36879,29 POKE 600,127
15 DIM N(100),D(100),I(100)
17 X=0
20 REM
22 REM ***** INSTRUCTIONS *****
30 PRINT "MUSIC AID"
35 PRINT "MUSIC AID"
40 PRINT "MUSIC AID"
45 PRINT "MUSIC AID"
50 PRINT "FIRST ENTER THE NOTES"
55 PRINT "FOR YOUR TUNE."
60 PRINT "ENTER THEM BY THE"
65 PRINT "LETTER UNDER THE NOTE"
70 PRINT "YOU NEED."
75 PRINT "MUSIC AID"
80 GOSUB 9000
100 REM
103 REM ***** PRINT LINES *****
107 PRINT "MUSIC AID"
110 PRINT "THE NOTES AVAILABLE"
115 PRINT "MUSIC AID"
117 PRINT "MUSIC AID"
120 PRINT "MUSIC AID"
125 PRINT "MUSIC AID"
130 PRINT "MUSIC AID"
135 PRINT "MUSIC AID"
140 PRINT "MUSIC AID"
145 PRINT "MUSIC AID"
150 PRINT "MUSIC AID"

```

```

155 PRINT "MUSIC AID"
160 PRINT "MUSIC AID"
165 PRINT "MUSIC AID"
170 PRINT "MUSIC AID"
174 PRINT "MUSIC AID"
176 PRINT "MUSIC AID"
178 PRINT "MUSIC AID"
185 PRINT "MUSIC AID"
190 PRINT "PLEASE ENTER NOTES"
195 PRINT "(ENTER '+' TO END)"
200 REM
203 REM ***** ENTER NOTES *****
205 REM
210 POKE 198,0 X=X+1 N$=""
220 PRINT "MUSIC AID"
230 PRINT "NOTE "X,"
232 INPUT ":",N$
235 IF LEN(N$)>1 THEN GOSUB 9100 X=X-1 GOTO 100
236 IF N$="" THEN 300
237 N=ASC(N$)
238 IF N<65 OR N>79 THEN GOSUB 9100 X=X-1 GOTO 100
250 RESTORE
255 READ A$,A IF A$="" THEN 255

```

```

256 N(X)=A
260 PRINT "MUSIC AID"
265 POKE 36876,220
266 FOR R=1 TO 50 NEXT R
267 POKE 36876,0
270 IF X<100 THEN 100
275 PRINT "***** OUT OF MEMORY *****"
280 FOR I=120 TO 245
285 POKE 36877,I NEXT I
290 POKE 36877,0
295 GOSUB 9000
300 REM
303 REM ***** INPUT DURATION *****
305 REM
310 PRINT "MUSIC AID"
320 PRINT "GET TIMING CORRECT"
330 PRINT "MUSIC AID"
335 PRINT "PRESS THE SPACE BAR"
340 PRINT "FOR EACH NOTE TO SET"
345 PRINT "THE DURATION."
350 PRINT "PRESS '+' TO RE-START"
355 PRINT "MUSIC AID"
360 PRINT "THERE ARE",X-1,"NOTES"

```

You'll notice some peculiar Commodore control characters in the listing. The functions of these are as follows:

30 clear screen, set black, move cursor down 35 cursor down, set blue 40 cursor down, set green reversed text, normal text 45 set reversed text, normal text 50 cursor down, set red 60 cursor down set green 65,70 cursor down 75 cursor down twice 107 clear screen, set green, reversed text normal text 110 set black 115 set reversed text, green, normal text 117-170 set black, green 174 set black 176 set green, black, green 178 set black 185 set green, reversed text, normal text 190,195 set black 220 cursor home, cursor down 20 times 240 set blue 232 set black 260 set reversed text green normal text 275 clear screen, set red, or down five times, set red, or down twice 310 clear screen, set green, reversed text, normal text 320 set black 330 set reversed text green, normal text 335 cursor down, set red 340,345 cursor down 350 set black, cursor down 355 cursor down, set green reversed text, normal text 360 cursor down twice set black, set red, set black 507 clear screen 515 set green, reversed text, normal text 518 reversed text green normal text 520-525 set black 530 set green reversed text, normal text 607 set black, clear screen, cursor down four times 610 set black 620 cursor down, set red 622-625 cursor down 630 cursor down twice set blue 635 set red 710 clear screen, set black 715 cursor down set red 770 cursor down twice, set black 840,865 set black 900 set red 930 clear screen 1010 clear screen, cursor down three times, set red 1020 cursor down 1030 cursor down, set blue 9020 set black, reversed text, normal text 9110,9150 cursor home, or down 11 times, set red



## VIC-20 PROGRAM

```

400 FOR I=1 TO X-1
410 POKE 198,0 T1$="000000"
420 GET A$ IF A$="" THEN 420
425 I(I)=T1
430 IF A$="+" THEN 300
435 T1$="000000"
440 POKE 36876,N(I)
450 IF PEEK(197)>64 THEN 440
460 D(I)=T1 POKE 36876,0 NEXT I
500 REM
503 REM ##### HEAR TUNE #####
505 REM
507 PRINT "T",
510 FOR J=1 TO 154
515 PRINT "M# ", NEXT J
518 PRINT "#####"
520 PRINT "##### PRESS ANY KEY TO"
525 PRINT "##### HEAR THE TUNE!"
530 PRINT "#####"
535 POKE 198,0
540 GET A$ IF A$="" THEN 540
550 FOR I=1 TO X-1
560 POKE 36876,N(I)
570 T1$="000000"
580 IF TIC(I) THEN 500
590 POKE 36876,0
591 T1$="000000"
593 IF TIC(I) THEN 593
595 NEXT I
600 REM
603 REM ##### ENTER OPTION #####
605 REM
607 PRINT "#####"
610 PRINT "##### DO YOU WANT TO "
620 PRINT "##### 1..LIST DATA"
622 PRINT "##### 2..RE-ENTER NOTES"
625 PRINT "##### 3..RE-ENTER TIMING"
630 PRINT "##### PLEASE ENTER 1,2 OR 3."
635 PRINT "#####"
640 POKE 198,0
650 GET A$ IF A$="1" AND A$="2" AND A$="3" THEN 650
660 ON VAL(A$) GOTO 700,17,300
700 REM
703 REM ##### LIST DATA #####
705 REM
710 PRINT "##### THE PROGRAM TO USE"
712 PRINT "##### THE DATA SHOULD BE"
715 PRINT "##### LIKE THIS"
720 PRINT "##### 10 READ N,D,I"
725 PRINT "##### 20 IF N=-1 THEN END"
730 PRINT "##### 30 POKE 36876,N"
735 PRINT "##### 40 T1$="000000"
740 PRINT "##### 50 IF TIC THEN 50"
745 PRINT "##### 60 POKE 36876,0"
750 PRINT "##### 70 T1$="000000"
755 PRINT "##### 80 IF TIC THEN 80"
760 PRINT "##### 90 GOTO 10"
770 PRINT "##### PRESS ANY KEY TO SEE THE DATA"
775 POKE 198,0
780 GET A$ IF A$="" THEN 780
800 NL=0 N=0 PRINT "T"
810 FOR I=1 TO X-1
820 N=N+1 NL=NL+I
830 IF N=19 THEN N=0 GOSUB 900
840 PRINT "##### DATA" N(I), "D(I)", "I(I)"
860 NEXT I
865 PRINT "##### DATA -1, -1, -1"
870 GOSUB 900 GOTO 1000
900 PRINT "##### PRESS ANY KEY"
910 POKE 198,0
920 GET A$ IF A$="" THEN 920
930 PRINT "T" RETURN
1000 REM
1003 REM ##### END OF PROGRAM #####
1005 REM
1010 PRINT "##### DO YOU WANT TO DO"

```

```

1020 PRINT "##### ANOTHER TUNE"
1030 PRINT "##### (Y OR N)?"
1040 POKE 198,0
1050 GET A$ IF A$="Y" AND A$="N" THEN 1050
1060 IF A$="Y" THEN RUN
1070 SYS 64802
9000 REM
9003 REM ##### PRESS ANY KEY #####
9005 REM
9010 POKE 198,0 POKE 36876,15
9020 PRINT "##### PRESS ANY KEY"
9030 GET A$ IF A$="" THEN 9030
9040 POKE 36876,220
9050 FOR I=1 TO 100 NEXT I,
9060 POKE 36876,0
9070 RETURN
9100 REM
9103 REM ##### INVALID INPUT #####
9105 REM
9107 FOR J=1 TO 5
9110 PRINT "##### INVALID INPUT!"
9120 FOR I=225 TO 245
9130 POKE 36877,I
9140 NEXT I POKE 36877,0
9150 PRINT "#####"
9155 FOR R=1 TO 50 NEXT R,J
9160 RETURN
40000 REM
40003 REM ##### DATA FOR NOTES #####
40005 REM
40010 DATA A,191,B,195,C,201,D,207
40020 DATA E,209,F,215,G,219,H,223
40030 DATA I,225,J,228,K,231,L,232
40040 DATA M,235,N,237,O,239

```

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# YOUR HOME COMPUTER GUIDE

All the facts you need to know about home computers are packed into the next pages. Mike Roberts covers popular computers costing under £400.

Dragon  
Genie Colour  
Atari 600XL  
Atari 800XL  
Laser 200  
Aquarius ZX81  
Genie I 16K  
BBC Model B  
Atari 800XL  
Lynx 96K  
Genie II 16K  
Atari 800  
Genie I 16K  
Genie II 48K  
ZX81  
Jupiter Ace  
Commodore 64  
Spectrum 16K  
Atari 800XL  
BBC Model B  
Tandy Colour  
Sharp MZ700  
Laser 200  
Genie I 48K  
Atari 800  
VIC-20  
Oric 16K  
Aquarius  
ZX81  
Jupiter Ace  
Spectrum 16K  
Oric 16K  
TI-99/4A  
Tandy MC-10  
Genie II 16K  
Genie I 16K  
Spectrum 48K  
Oric 48K  
VIC-20  
Sord M5  
Atari 400  
Atari 600XL  
Lynx 96K  
Sharp MZ700  
Tandy Colour  
Colour Genie  
Dragon  
Electron  
Lynx 48K  
Laser 200  
Aquarius  
Genie I 48K  
BBC Model B  
Jupiter Ace  
Sord M5  
Spectrum 16K  
Oric 48K  
Lynx 48K  
Spectrum 16K  
Atari 400  
Oric 16K  
TI-99/4A  
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Spectrum  
Atari 400



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# How to use the guide

**Price:** This is the recommended price. It is often possible to find a lower price by shopping around. The guide is in price order. Memory is given next to the total random access memory, followed by the amount you can actually use for your programs after the computer has taken what it needs. Then there is the size of the read-only memory which can be used but not changed. Its size is a fair indication of the complexity of the built-in language.

**Keyboard:** If you are a typist you may feel you need a typewriter style keyboard which puts up the price of the computer. Many of the popular computers have button-like keys each of which performs several duties.

**Screen:** The number of columns or characters per line and number of lines of text on the screen, followed by high resolution modes in which images can be designed by programming. Colours and other screen features are also given.

**Sound:** the more the better, particularly for arcade-style games.

**Languages:** most micros have BASIC built in, and others available at extra cost. Microsoft BASIC is the most popular and if you know this you can switch fairly easily to another computer using it. But this does not mean programs will run unchanged on different computers. Except in rare cases they will not.

**Processor:** One of the most important things in a computer. The most popular are 6502, 6520 and the Z80 and Z80A. The 6502 is probably the best and fastest, although this depends on the application.

**Operating system:** Used by the computer as a common core to control itself and what your software asks of it. Most are machine specific. Similar operating systems make it easy for experts to convert software.

**I/O** stands for input/output the sockets through which the computer communicates with the outside world. All computers can interface to cassette recorders, so this is not mentioned. Sockets for domestic TVs are not given for the same reason. RS-232 and Centronics are the industry standard interfaces for a wide range of printers.

**Number sold in U.K.** is an estimate from the maker.

**Speed:** a general indication only.

**Add-ons:** a guide to the devices you can plug into the computer, from extra memory to sophisticated printers. The computer magazines are packed with advertisements from makers of add-ons. Study them if you want to use the computer for a particular job.

**Software,** after price and memory, is probably the major factor in choosing a computer. The difficulty is that the newer, more sophisticated computers generally have less software available. After all, independent software houses are inclined to produce programs for micros which have sold in their thousands. In many cases, however, micro makers commission software for new launches.

**Opinion** is mine alone. Do decide why you want a computer before going into the shop and then ensure you get a demonstration. Members of your local computer club (details at libraries) will also be glad to help.

The computers in alphabetical order

|                     |         |
|---------------------|---------|
| Atari 800XI         | £239.99 |
| Atari 800           | £299.99 |
| Atari 600XL         | £160    |
| Atari 400           | £149.99 |
| Aquarius            | £59.95  |
| BBC model B         | £399    |
| Colour Genie        | £168    |
| Commodore 64        | £229    |
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| Genie I 48K         | £365.70 |
| Genie II 16K        | £299.99 |
| Jupiter Ace         | £89.95  |
| Laser 200           | £69.95  |
| Lynx 48k            | £226    |
| Lynx 96k            | £299    |
| Memotech MTX500     | £275    |
| Memotech MTX512     | £315    |
| Nascom 2            | £327.75 |
| Oric 16k            | £99.95  |
| Oric 48K            | £139.95 |
| Sharp M/700         | £249.95 |
| Sord M5             | £149.95 |
| Spectravideo SV 318 | £198.95 |
| Spectravideo SV 328 | £274.95 |
| Spectrum 16k        | £99.95  |
| Spectrum 48k        | £129.95 |
| Tandy MC-10         | £99.95  |
| Tandy Colour        | £239.95 |
| TI-99 4A            | £99.95  |
| VIC-20              | £139.95 |
| ZX81                | £39.95  |

• This guide will appear again. Any amendments should be sent as soon as possible to Micro Guide, Home Computing Weekly, 145 Charing Cross Road, London WC2H 0EE





# JUST AROUND THE CORNER, A NEW

## BLACK CRYSTAL



### BLACK CRYSTAL

The Classic, six program adventure game for the 48K Spectrum and 18K ZX81 computers. No software collection is complete without it. Black Crystal is an excellent graphics adventure and a well thought out package. *Sinclair User, April '83* Black Crystal has impressed me by its sheer quantity and generally high quality of presentation. I am afraid I have become an addict. *Home Computing Weekly, April '83* Spectrum 48K 180K of program in six parts only £7.50 ZX81 18K over 100K of program in seven parts only £7.50 **WHY PAY MORE FOR LESS OF AN ADVENTURE!**

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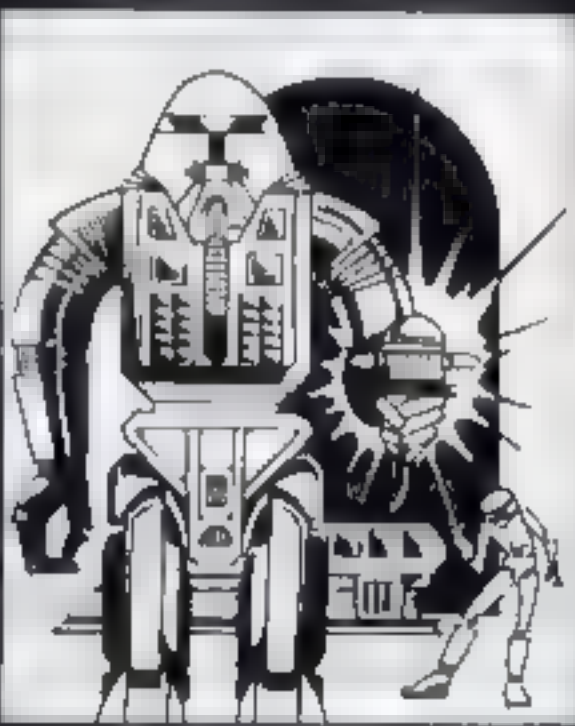
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ALIEN INTRUDER



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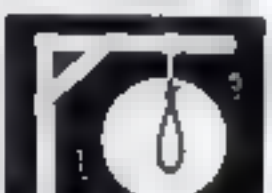
HIROGLYPHICS



WUMPUS ADVENTURE



MOVIE MOGUL



HANGMAN

### ZX81 COMPENDIUM

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The ideal software package for all 18K ZX81 owners. Six major programmes on five cassette tapes only £5.50

Alien Intruder/Hieroglyphics — Best programs make good use of graphics and words to make a very entertaining package. *Sinclair User Aug '82* Hieroglyphics/Wumpus/Movie Mogul — A varied mix from Carnell, all featuring imaginative responses and graphics and all of them good games for all ages (Hieroglyphics is particularly good for children). *Popular Computing Weekly Aug '82*

### THE DEVIL RIDES IN

... offered the last incarnations as the clock struck thirteen. All fell silent. I joined the battle. Avoiding fire bolts of hell fire, I look carefully at the... held

(Fast moving, machine code, action, Arcade game)

Available for 48K Spectrum £5.95



The above are available through most good computer stores or direct from

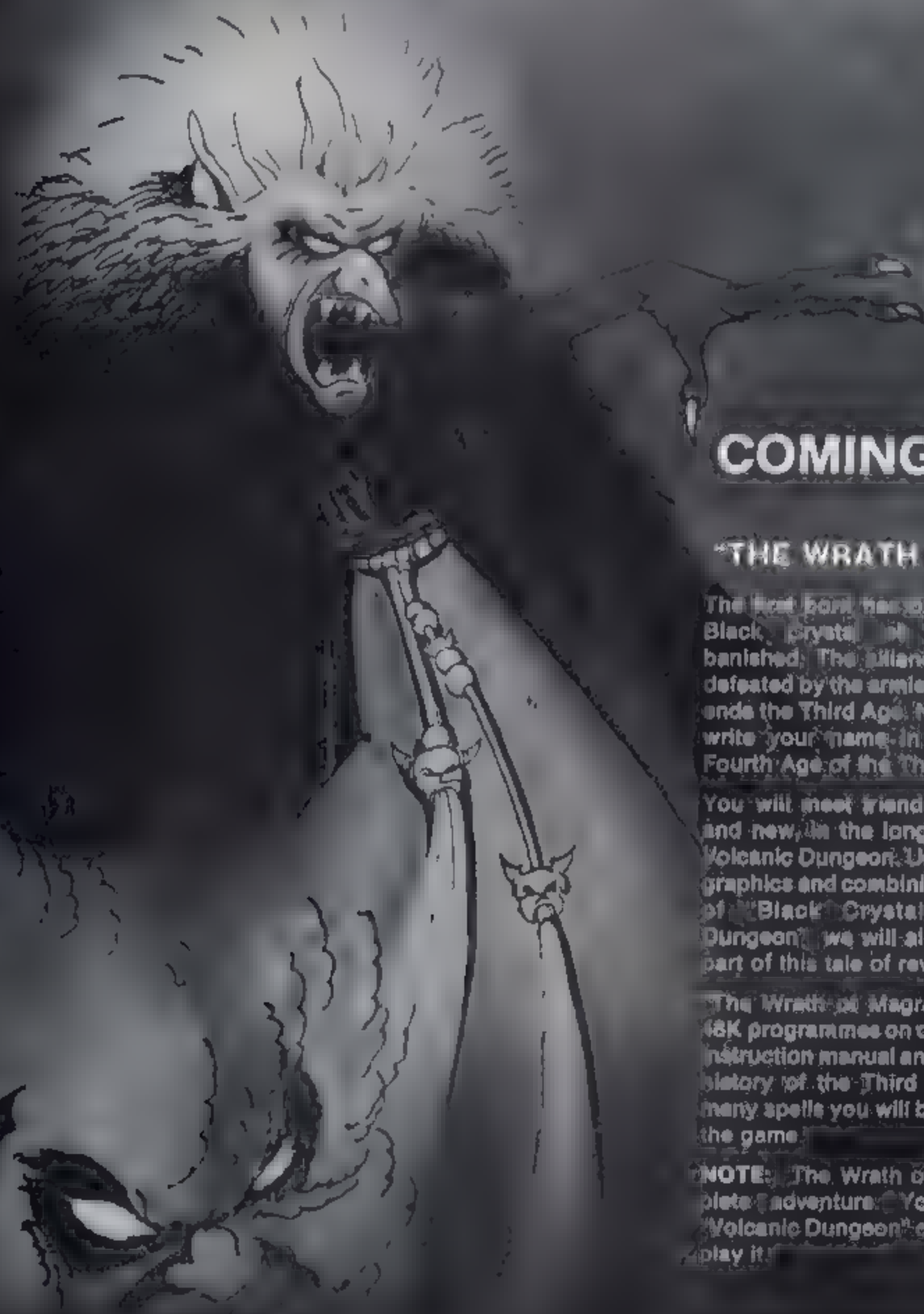
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**NOTE:** "The Wrath of Magra" is a complete adventure. You need not buy "Volcanic Dungeon" or "Black Crystal" to play it.



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 Postern is always on the look out for any new games you might have developed.



## BUYERS' GUIDE

**ZX81****£39.95****1K RAM (0.3K useable) 8K ROM**

**Keyboard:** flat membrane-type, 40 keys, no space bar or special function keys or dedicated cursor control keys, five functions per key.

**Screen:** 32 columns by 22 rows, only 20 rows useable. Black and white display, no hi-res or colour but 64 by 40 plotting of points is supported. Display is reverse of most, i.e. letters are black on white.

**Sound:** none

**Languages:** BASIC, very simple and very non-standard. **Processor:** Z80A. **Operating system:** Sinclair. **I/O:** none included but can be added via an expansion port. ZX Printer requires no interface. **Number sold in UK:** 500,000.

**Add-Ons:** A 16K RAM pack is available at £29.95. A printer that works by electrostatic printing on unmetallised paper 4½ in wide costs £39.95, but this is only really useful as a cheap means of listing a program.

**Add-ons:** Interfaces are available for almost every application, due to the large amount of users. This also applies to other add-ons, such as better keyboards, RAM packs and joysticks. **Software:** likewise available in great quantity and for the same reasons although little is produced now because the ZX81 has been overtaken for most purposes by the new generation of colour computers. A starter pack of ZX81, 16K RAM pack and games tape costs £45.

**Opinion:** An old design at a low price. The keyboard is very hard to use and soon wears out, although extension keyboards can be added. Screen display quality is poor and tiring to look at for any length of time. Editing is very minimal. All inputs, whatever they are, must be on the bottom line. Key words must be entered with assigned keys. The ZX81 is useful as an introduction to computing and even then it is hard to move on as the BASIC is so non-standard. It is compatible with a small sub-set of the Spectrum's more basic features. The ZX81 has two speeds of operation: very slow and slower still.

**Sinclair Research:** Stanhope Road, Camberley, Surrey GU15 3BR

Camberley (0276) 685511

Keep our guide  
with you when you are buying  
Christmas gifts. Or you could  
leave it open as a hint to the  
rest of the family . . . .

**AQUARIUS****£59.95****4K RAM (2K useable) 8K ROM**

**Keyboard:** hard rubber mat type similar to but slightly better than the Spectrum's. 49 keys, no user definable keys, no dedicated cursor control keys, no space bar.

**Screen:** 40 columns by 24 rows text with 16 colours. No hi-res graphics or definable characters, but hi-res is claimed with expansion although no details of this are available.

**Sound:** single channel sound generator

**Languages:** Microsoft BASIC included. LOGO and Extended BASIC planned. **Processor:** Z80A. **Operating System:** custom. **I/O:** none included except cartridge port and expansion bus. **Number sold in UK:** new machine so no figures yet available. **Speed:** medium.

**Add-ons:** mini expansion box gives two extra channels for sound generation, two cartridge slots. Joy pads are available which are similar to Mattel's Intellivision joy pads. A cassette recorder is an option but a normal cassette recorder can be used although Mattel say there have been problems and recommend their own recorder. A 40-column thermal printer can be attached without extra interfaces. A modem and a maxi expander are planned. Since this is a fairly new computer there is nothing forthcoming from independent suppliers.

**Software:** available from Mattel. About 15 cartridges. None known from independents.

**Opinion:** this computer appears to be a sort of colour ZX81 but it has quite a lot of other capabilities. The big problem is its lack of memory. Even so a lot can be done with this amount and it does have the advantage of a cartridge slot, sound of a sort, colour graphics, and the keyboard is slightly better than a Sinclair effort.

**Mattel,** North End Road, Wembley, Middx HA9 0AB  
01-900 0311

**Laser 200****£69.95****4K RAM 16K ROM**

**Keyboard:** 45 Spectrum-like rubber keys, but more widely spaced. Up to four functions per key.

**Screen:** 32 columns by 16 rows or 128 by 64 in graphics mode, 96 characters. Eight foreground colours in text mode, four colours for graphics.

**Sound:** single channel.

**Languages:** BASIC, with optional single key entry, built in and more promised. **Processor:** Z80A. **Operating system:** custom. **I/O:** Centronics port for printers etc and expansion slot. **Number sold in UK:** no figure available — computer was launched in July.

**Software:** 15 titles available from distributors with more promised. Distributor says three software houses are writing for the Laser.

**Add-ons:** 16K RAM pack available now. To follow soon: 64K RAM pack, joysticks, light pen, RS232 interface, four-colour printer/plotter.

**Opinion:** Aimed squarely at first-timers, the Laser 200 is easy to use for beginners. However, the 16K RAM pack costs about £30, taking it into the hoily-contested Spectrum/Oric bracket. Screen resolution is limited and so is the colour display. Stylish appearance. The Laser 200 is made in Hong Kong and known in the US as the VZ200.

**Computers for All,** Southfields Industrial Park, 30 Hornsby Square, Landon, Essex.  
Basildon (0268) 418414

**JUPITER ACE****£89.95****19K RAM (17K useable) 8K ROM**

**Keyboard:** rubber mat similar to Spectrum, 40 keys, no space bar or special function keys or dedicated cursor control keys, three functions per key.

**Screen:** 32 columns by 24 rows, black and white display, all characters are user definable, no hi-res or colour but block graphics are included.

**Sound:** internal beeper.

**Languages:** Forth is standard. **Processor:** Z80A. **Operating system:** custom. **I/O:** none included but can be added via expansion port.

**Add-Ons:** 48K RAM pack is £79.95 although this price is currently under revision. Printer interfaces etc. are available from independent manufacturers. One enables Sinclair's ZX Printer to be used. BASIC and disc drives are under development although nothing is known about these except that the discs are of the three inch real disc type (none of your continuous loop tapes here) and a full disc system will cost around £300. **Number sold in UK:** 5,000. **Speed:** fast.

**Software:** available in limited quantity.

**Opinion:** a good computer that suffers by having a language that differs from most others. The manual is clear and concise and will explain most of the oddities of Forth. The program editor is unusual because it is orientated towards the editing of Forth words, which is good for this kind of application but may confuse some people. Fast speed is mainly due to the language the computer uses. The Ace would be useful for people who want an introduction to Forth, a fast computer or simply want to be different.

**Jupiter Cantab,** 22 Foxhollow, Bar Hill, Cambridge CB3 8EP  
Cambridge (0223) 313479



**Spectrum 16K**

**£99.95**

16k RAM (7.5k useable) 16k ROM

**Keyboard:** rubber mat type, 40 keys, no space bar, definable function keys or dedicated cursor control keys, five or six functions per key

**Screen:** 32 columns by 24 rows, but only 22 rows are available to the user. 256 by 192 high-resolution graphics supported by BASIC, two colours from a palette of eight are available in 704 areas on the screen. Foreground and background colours for each of these areas can be selected as well as whether the contents of the area are flashing or not. Two levels of intensity are also supported. 21 user defined characters are available

**Sound:** internal beeper

**Languages:** Sinclair BASIC. This version is an extended form of the type used in the ZX81. The extensions do not cover structured programming or aid functions and only deal with the graphics and file handling. This BASIC is very non-standard. **Processor:** Z80A **Operating System:** Sinclair I/O: none included but the ZX printer can be added without an interface. **Number sold in UK:** 400,000. **Speed:** medium

**Add-Ons:** ZX Printer (see ZX81 for description) Microdrives, fast continuous loop tape recorders costing £49.95, need the ZX Interface to be attached. This costs £29.95 when purchased with a Microdrive or £49.95 when bought separately. The interface also provides a printer interface and a networking system. ZX Interface gives two Atari-type joystick ports and a slot for ROM games cartridges. This costs £19.95 with 10 cartridges at present available at £14.95 each. Many other add-ons are available from independent suppliers

**Software:** a lot of software is available for almost all applications, particularly games. Despite the business software available, the Spectrum cannot realistically be considered as a business machine

**Opinion:** when the Spectrum first appeared it was quite an innovation as the lowest priced colour computer. But newer designs have arrived recently with better technical specifications and more useable memory at similar prices. The colour display is not good and a colour display cannot be produced on a few colour TVs. For editing and the method of keyboard entry see ZX81. With the Spectrum there are more keywords to be fitted on the same size of keyboard. Sound is though a beeper only. The range of software available is enormous. See also Spectrum 48k

**Sinclair Research, Stanhope Road, Camberley, Surrey GU1 1PS**

Camberley (0276) 685311



**Oric 16K**

**£99.95**

16k RAM (14k useable in text mode, 7.5k in graphics mode) 16k ROM

**Keyboard:** raised key, similar to calculator type but better, 57 keys, space bar, dedicated cursor control keys, no definable function keys, two functions per key

**Screen:** 40 columns by 28 rows Teletext compatible text display, two user definable character sets, eight foreground and eight background colours, double height, flashing, and inverted attributes available for each character. Graphics screen gives 240 by 200 resolution, colours and attributes are definable on a grid of 40 by 200. In each of these areas the foreground and background can be defined in eight colours, flashing and inverted output is also supported. In graphics mode three lines at the bottom of the screen also appear, and these are the same as the text mode lines

**Sound:** sound generator with three channels and noise generator. There is a certain amount of envelope control. Pre-programmed sounds produce pings and zaps etc. Sound is produced through an internal speaker although hi-fi output is available through a DIN socket.

**Languages:** Extended Microsoft BASIC built in. Forth available, BBC-like BASIC planned. **Processor:** 6502A **Operating System:** custom. **I/O:** Centronics parallel printer port, user port, monitor port, expansion connector. **Number sold in UK:** 200,000. **Speed:** fast

**Add-Ons:** from Oric, a four colour printer/plotter using 4 1/2 in paper to give very good quality output up to 80 columns. A communications modem and three-inch disc drives are to be available soon. Joystick interfaces and other such items are available from independent suppliers

**Software:** quite a lot, more appearing every day

**Opinion:** This computer has always been compared to the Spectrum, and this is justified as they are outwardly similar and prices are the same. Looking at the two computers though, the Oric wins. The Basic is easier and is a structured form of the de-facto standard Microsoft BASIC. The keyboard is better, the graphics are better, it has real sound which is lacking in the Sinclair machine. Interfaces are built in that would normally cost extra. The edge that the Spectrum has is more software. See also 48k Oric

**Oric Products International, Coworth Park, London Road, Ascot, Berks SL 5 7SE**

Ascot (0490) 27686





## BUYERS' GUIDE

### TI-99/4A

£99.95

16K RAM (14.5K useable) 26K ROM

**Keyboard:** typewriter style, 48 keys, including row of function keys (not user-definable), space bar. Two functions per key.  
**Screen:** 32 columns by 24 rows text, 128 characters, all user-definable, 16 colours each for foreground and background. The way colour is handled is rather odd — a colour is assigned to a particular group of characters. There are 16 groups of eight characters, so a particular colour can be assigned, for example, to the letter A but will also affect B to H. High-resolution graphics only available with TI plug-in cartridges.

**Sound:** three channels of five octaves with noise channel.  
**Languages:** TI BASIC is included, but cannot use machine code, so arcade quality programs cannot be written or bought on cassette for the standard model. To write or use machine code programs, TI's Mini Memory or Editor Assembler cartridges are needed. Machine code can also be used with Extended BASIC, provided 32k is added. LOGO, the teaching language, is also available. **Processor:** TMS 9900. **Operating system:** custom. **I/O:** joystick and cartridge ports. **Number sold in UK:** TI would not comment, our estimate: 50,000. **Speed:** slow.

**Add-ons:** Apart from joysticks and speech synthesiser, all need a peripheral expansion box. Available: disc drives, 32k RAM card, RS232 serial port for printers. TI's own cassette recorder includes a cable, your own will need a special cable. There are very few independent add-ons.

**Software:** More software is becoming available — including LS imports — but you may be forced to buy through mail order. TI sells a range of sophisticated cartridge software which is more expensive.

**Opinion:** an interesting computer which is now quite good value at its new low price. And it looks like a real machine with its good keyboard. Its drawback is that machine code cannot be used with the standard model so there is not much arcade-type cassette software, although this is slowly increasing. However, if all the games that interest you are from TI and you are willing to pay cartridge prices, then this is a good machine. For programmers it has a line editor which, although one of the better versions, is awkward to use. The BASIC is slow but easy to use and comprehensive. Its worst features are that there can be just one statement per line and spaces are essential. Maths functions are good but string functions leave something to be desired. The computer is very well built and looks attractive.

Texas Instruments, Manton Lane, Bedford MK41 7PA  
Bedford (0234) 67466

### Tandy MC-10

£99.95

4K RAM 8K ROM

**Keyboard:** 47 hard plastic keys in Spectrum-style layout, includes 16 graphics keys, space bar. Single key keyword entry.  
**Screen:** 32 columns by 16 lines text, 64 by 32 graphics. Eight colours.

**Sound:** single channel, five octaves controlled from BASIC.  
**Languages:** Microsoft BASIC. **Processor:** 6803. **Operating system:** Microsoft. **I/O:** RS-232. **Number sold in UK:** no comment from Tandy, but small because computer launched recently. **Speed:** medium to fast.

**Add-ons:** 16K RAM pack. Also compatible with Tandy printers.

**Software:** a small range, but growing.

**Opinion:** Tandy is selling this computer through 220 of its stores, rising to around 300, so support is excellent. It has been on sale in the US since May, so imported software from independents is likely. No UK independent software is known. You may feel the relatively high price is partly offset by Tandy's reputation for service and advice.

Tandy, Tameway Tower, Bridge Street, Walsall, West Midlands WS1 1LA  
0922 64818



### Spectrum 48K

£129.95

48K RAM (39.5K useable) 16K ROM

Identical to 16k version in every respect except price and memory and the fact that more software is available due to increased memory size.

Sinclair Research, Camberley, Surrey GU15 3BR  
Camberley (0276) 685311

### Oric 48K

£139.95

48K RAM (46K useable in text mode, 39.5K free in graphics mode) 16K ROM

Identical to the 16k version except for the memory differences and certain control lines on the expansion port to allow the ROM to be switched out and more memory used.

Oric Products International, Coworth Park, London Road, Ascot, Berks SL5 7SE  
Ascot (0990) 27686

### VIC-20

£139.95

6K RAM (3.5K useable) 20K ROM

**Keyboard:** typewriter quality, 67 keys, space bar, dedicated cursor controls, four user-definable function keys.

**Screen:** 22 columns by 23 lines, eight colours for text, 16 for background and border and graphics. All characters user-definable, lower case, inverted output, two character sets. High-resolution possible with expansion cartridge or with extra programming but BASIC does not support this. Two modes, 160 by 128 in eight colours and 80 by 128 in 16 colours.

**Sound:** three channels and one noise channel covering nine octaves through TV speaker.

**Language:** Commodore BASIC supplied, compatible with PET and Commodore 64. Extended BASIC, at extra cost gives access to the hi-res, sound, and user-definable function keys. Forth, Comal and PLOT are available. **Processor:** 6502A. **Operating system:** Commodore Kernal. **I/O:** IEEE 488 serial bus, RS232, user port, cartridge port, joystick port, two paddle port (two analogue to digital converters). **Number sold in UK:** 500,000.

**Speed:** medium to fast.

**Add-ons:** lots available due to its immense popularity. From Commodore alone there are printers, plotters, disk drives, modems and, via an IEEE 488 parallel cartridge, access to Commodore, Hewlett Packard and laboratory instruments. Disc drives up to a hard disk Winchester holding 32 Megabytes. The computer is sold as a package including the Commodore cassette recorder which is needed to record programs on tape. Memory expansion up to 24k is available.

**Software:** Many cassette tapes and cartridges from independents and Commodore.

**Opinion:** this is a nice machine to get started on and it comes as a package containing a computer, a cassette recorder, a beginners guide to BASIC and a games tape. So the initial high price for a 3.5k machine is somewhat offset. The BASIC is very easy to learn and is Microsoft compatible. This type of BASIC was first used by Commodore on the first widely available micro in 1977 so there is a lot of compatible software around.

Commodore Business Machines, 675 Ajax Avenue, Slough, Berks SL1 4BG  
Slough (75) 79292 74111



**Atari 600XL**

**£160**

16K RAM (amount useable varies with graphics mode used) 26K ROM

**Keyboard:** Full typewriter style keyboard, 58 keys, four function keys, space bar but no dedicated cursor control keys

**Screen:** 16 screen modes comprising five text modes and 11 graphics modes. Text is 40 columns by 24 lines in up to 256 colours. The graphics have a maximum resolution of 320 by 192 in the maximum hi-res mode. All characters are user definable and come in predefined shapes to start with. Player-missile graphics - like sprites - are also available

**Sound:** four channel sound generator with full software support

**Languages:** Atari BASIC included and these are available: Forth, Pilot, Logo, WSM, Pascal, Microsoft BASIC. Two types of assembler editor are also available

**Processor:** 6502A  
**Operating System:** Atari OS. **I/O:** serial input-output port, along with two connectors for two joysticks or four paddles. Other interfaces may be added via interface bus. Slot for ROM cartridges. Cassette port will only allow connection of Atari cassette recorder at £49.99, so this must be taken into account when considering costs. **Number sold in UK:** Atari would not comment. **Speed:** medium to fast

**Software:** the XL series is software compatible with older models so a lot of software is on sale both from Atari - which has a library of 500 titles - and from independents, including US imports

**Add-Ons:** Atari's essential cassette recorder uses one track for computer data and the other for audio that can be made to play under program control for purposes such as language tuition. Joysticks, paddles, and light pens are available from Atari. A disc system using a custom DOS. A C P M cartridge, a printer/plotter, a printer with a typeface like a daisy wheel but using a new system and a graphics tablet are due soon

**Opinion:** The best of both worlds - a new design which can run the software for the older range. Excellent graphics and much of the software uses this to the full. Can be used by small businesses and the software for this is available. Writing your own programs is made easier by the full screen editor with all insert, delete and other functions easily accessible. Second only to the Commodore system for this. See also Atari 400, 800 and 800XL

Atari, Railway Terrace, Slough, Berks SL2 5BZ  
Slough (75) 33344



**Atari 400**

**£149.99**

16K RAM (amount useable depends on graphics mode) 16K ROM

Similar to Atari 800 except that memory cannot officially be expanded above 16K. "Sculptured" membrane keyboard and only one cartridge slot, usually occupied by the BASIC cartridge

**Opinion:** keyboard is better than the ZX81 type of flat membrane, because the surface is contoured to form a ridge around each key area on the keyboard and a beep sounds every time you press a key to reassure you that the keypress has been accepted

See also Atari 800, 600XL, and 800XL  
Atari, Railway Terrace, Slough, Berks SL2 5BZ  
Slough (75) 33344

**Sord M5**

**£149.95**

24k RAM (4k useable) 8k ROM

**Keyboard:** hard rubber mat, 65 keys, no space bar, no dedicated cursor control keys or user definable keys. Optional single key word entry from keyboard.

**Screen:** BASIC I - 32 columns by 24 rows in 16 colours. BASIC G adds sprites and 64 by 48 medium resolution 16 colour graphics. There are a number of graphics modes but these are mainly to do with different ways of handling the sprites

**Sound:** three channel sound generator with one noise generator. Sound covers eight octaves

**Languages:** BASIC I, included, is non-standard and has integer only arithmetic and not much in the way of graphics commands. BASIC G, available at extra cost, makes use of graphics described above, but also has integer-only arithmetic. BASIC F allows floating point maths and is designed for mathematical and scientific programming. **Processor:** Z80A.

**Operating system:** custom. **I/O:** Centronics parallel printer port, two joystick ports, cartridge slot. Cartridge slot cannot be used at the same time as BASIC because the BASIC is on a cartridge and thus occupies the port. **Number sold in UK:** no figures available - this is a new release.

**Add-Ons:** 32k RAM, printers, joy pads, cartridges and an expansion box with three cartridge slots are available from Sord. As this is a new machine there is not a lot from independent suppliers

**Software:** A lot of cartridges from Sord, including a Visi-Calc lookalike and the other BASICs described above. None available from independent suppliers

**Opinion:** overpriced and with an inadequate BASIC. Otherwise a fairly standard machine with nothing to shout about except for its lack of memory for user programs, and bad BASIC. Sprites fairly good. There are much better machines at better prices.

Sord Computer Systems, Samuel House, 6 St Albans Street, Haymarket, London SW1Y 4SQ  
01-930 4214

**Colour Gene**

**£160**

32K RAM (30K text mode, 26K hi-res mode useable) 16K ROM

**Keyboard:** typewriter style, 63 keys, space bar, dedicated cursor control keys, four user definable function keys, full BASIC support for eight with shifts

**Screen:** text mode - 40 columns by 25 rows of text with 16 colours, 128 characters user definable. Graphics mode - 160 by 102 hi-res in four colours with one background colour. The BASIC supports the graphics with commands to do almost anything and is very comprehensive

**Sound:** three channels, each capable of noise production, eight octaves, no envelope control

**Languages:** Microsoft Extended BASIC included, Forth available. **Processor:** Z80. **Operating system:** custom. **I/O:** two parallel ports, RS232 serial port, cartridge port, joystick port. **Number sold in UK:** not available. Not that many but number growing all the time. **Speed:** slow to medium

**Add-Ons:** from Lowe Computers - Centronics parallel printer interface, joysticks, printers, modem, disc drives. Not a lot from independent suppliers

**Software:** About 60. Some converted from compatible TRS-80 and Gene I

**Opinion:** at first the Colour Gene suffered from too high a price and too small a memory. But now memory has been increased and the price cut looks like taking off. The BASIC is a good implementation and has all the necessary things plus some nice additions. Interest is now growing steadily, although whether it will be able to stop the assault by new machines such as the Electron is questionable as it does not have the backing of lots of independent software to keep it afloat. A shame, as this is a good computer worthy of more attention

Lowe Computers, Chesterfield Road, Matlock, Derbyshire DT4 5LE  
Matlock (0629) 4057 4995



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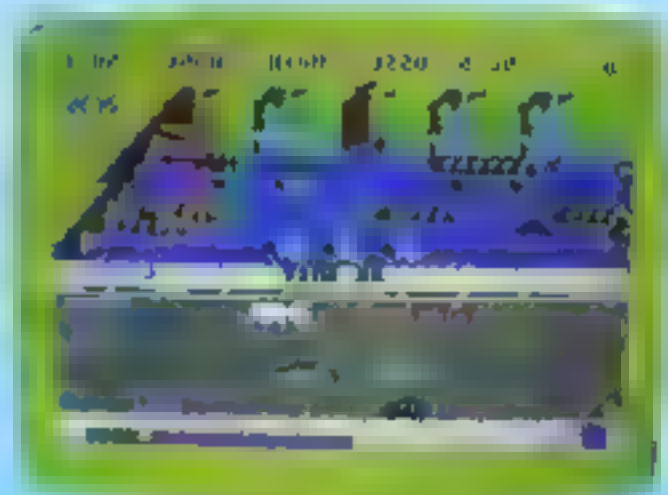
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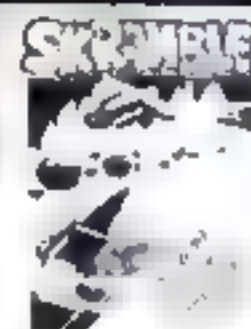
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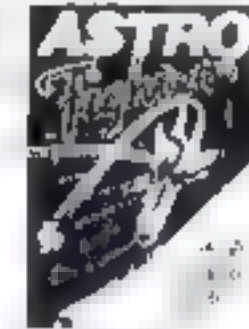
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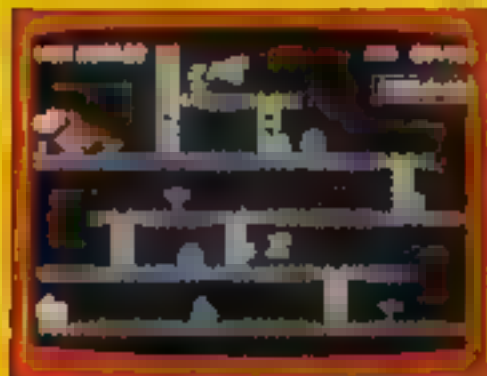
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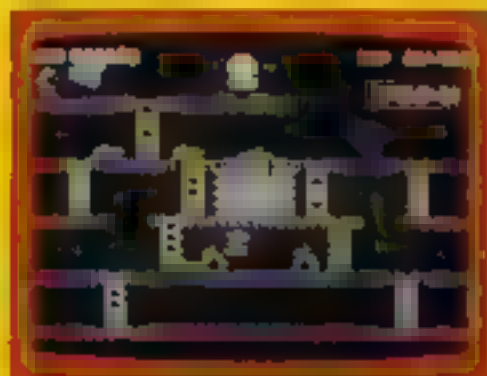
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# SOFTWARE SOFTWARE

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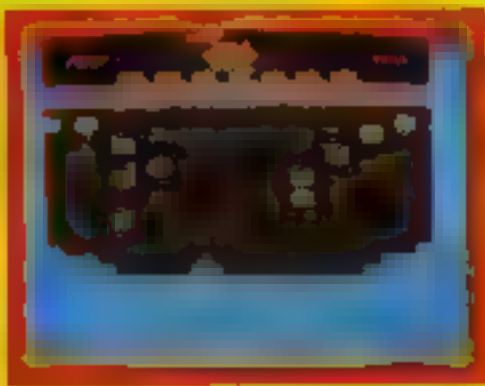
GALACTIC ABDUCTORS



3D TIME TREK



XENO II



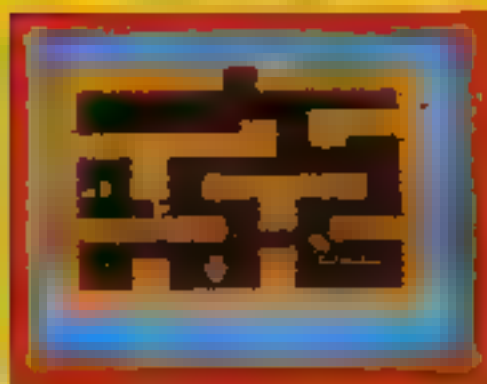
MINI KONG



FROG RUN



PHAROAH'S TOMB



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Enter the realms of fantasy with this superb high resolution, multi-colour graphic adventure on the VIC 20. Battle with the fearful fire breathing Red Dragon and many other monsters to see if you can find the magic key to escape. Choose your role as Magician or Fighter. The dungeons comprise one hundred chambers. Avoid the traps, gain experience points and collect treasure provided you do not get starved in the process. You can save the adventure and solve it over months or quit and have a new adventure. Text and graphical adventure that will entertain, frustrate and reward you.

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The Pharaoh's tomb was desecrated by the tomb robbers and now abounds with evil. Only by entering the chamber with TRIANGLE OF GOD can you remove this evil. The key to the chamber was smashed into pieces which you must find. Beware of the traps set by the ancient Egyptians to punish all those who enter the sacred tomb.

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**DRACULA/LOST IN THE DARK** K.B. UNEXP.

Two superb graphic adventures for the unexpanded VIC

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**KRAZY KONG** K.B./J.S. 16K EXP.

A very popular arcade game has been brought to life in this all machine code presentation with four screens, multi-colour graphics plus features like hi-score table. A game to enthral the whole family.

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**GALACTIC ABDUCTORS** J.S. 16K EXP.

Experience the terrifying, relentless sound of the approach of the Cybernetic space hawks. While you try to protect yourself from the awesome contents of their pods, they feed greedily on the helpless humanoids. All machine code program that fills the whole of the screen with stunning graphics while it tests your skills to the u'l' mate.

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**3D TIME TREK** J.S. 16K EXP.

A brilliant Star Trek game with a difference. Spectacular 3D graphics, real arcade action plus a game of strategy against marauding space pirates.

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**XENO II** J.S. 16K EXP.

This all m/c game is for true arcadians with super fast reactions and nerves of steel under pressure. The fourth screen will test you to the limit as the power source guardians bombard you while your shots are blocked by whirling suicide space ships.

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An all m/c game with six sectors and similar to the 64 version.

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Mini version of our famous Krazy Kong. Rolling barrels, lift, handbags, running score, hi-score plus expanded screen and brilliant multi-colour graphics.

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A fast moving comical game involving skill and strategy. Sam, the painter man, is chased by woodworms he uncovers while painting a large area. He must now paint with skill and planning to isolate them and make frequent trips to fill up the paint pot.

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**Dragon 32**

**£175**

32K RAM (30K to 24K RAM useable depending upon graphics mode used) 16K ROM

**Keyboard:** 52 key typewriter style, space bar, no user definable function keys or dedicated cursor control keys. Keyboard quality could be improved.

**Screen:** text mode 32 columns by 24 rows, text in one colour, no lower case or user definable graphics or colour, but there is an inverted output option. Text mode does have block graphics in colour though. **Graphics mode:** ranges from 256 by 192 in one colour to 128 by 192 in four colours. Text is not supported in this mode.

**Sound:** one channel music generator covering five octaves, good software control.

**Languages:** Microsoft Extended Colour BASIC included. Identical to Tandy colour computer BASIC. Other languages from independents. **Processor:** 6809E. **Operating System:** Microsoft's own, modified by Dragon, compatible with the Tandy. OS/09 is to become available when Dragon release discs. **I/O:** User port, Centronics parallel printer port, two joystick ports, cartridge port. **Number sold in UK:** 100,000.

**Add-Ons:** joysticks and disc drives from Dragon. Lots available from independents, ranging from printers to disc drives. Most Tandy suppliers have peripherals that will fit Dragon, likewise Tandy software. But software has only a certain amount of compatibility and it is wise to check

**Software:** quite a lot available from Dragon and independents and (but check) Tandy.

**Opinion:** this micro is limited by its very basic sound system and its horrible text mode with very limiting formats. The BASIC is very good at manipulating screen graphics although it does not allow structuring. An altogether much better buy than the Tandy computer to which it is so similar because it already has much of the expansion that comes at extra cost for the Tandy machine and at a price that is lower than the basic initial price of the Tandy machine.

**Dragon Data,** Kenfig Industrial Estate, Margam, Port Talbot, West Glamorgan SA13 2PE  
Kenfig Hill (0656) 744700

**Spectravideo SV 318**

**£198.95**

32K RAM (16K useable) 32K ROM

**Keyboard:** 72 rubber keys in typewriter layout, plus built-in joystick.

**Screen:** 80 columns by 24 rows text and 256 by 192 in hi-res mode, 16 colours and 32 sprites

**Sound:** three channels, eight octaves, through external speaker, including TV, only

**Languages:** The first computer in the UK to use MSX BASIC which is being promoted by several major manufacturers as a standard. Plus Extended Microsoft BASIC. **Operating system:** custom **Processor:** Z80. **I/O:** two joystick ports, Centronics interface, expansion port. **Number sold in UK:** computer just launched, supplies limited.

**Add-Ons:** all the following available now, says importer — joysticks, single and multi expansion units, adaptor for Coleco and Atari cartridges, 16K and 64K RAMpacks (to maximum of 144K), RS-232 interface, disc drive cartridge which also adds the CP/M business operating system, twin 5¼in disc drives, dot matrix printer (made by Seikosha), graphics tablet. Cassette unit, at £39, is essential?

**Software:** five cartridges (£16 each) and 15 cassettes (at £5 90) available now. Importer is talking to UK software companies

**Opinion:** An interesting new computer from an experienced Hong Kong manufacturer. Lots of add-ons, a rarity for a new micro, the first opportunity to try MSX BASIC and, a nice touch, a built-in joystick. Will all this outweigh the rubber keys and the fact that, like Commodore, the company's own £39 cassette recorder is essential. But then, look how many micros Commodore has sold. See also Spectravideo SV 328 priced at £274.85

**CK Computers,** 6 Devonia House, High Street, Worle, Weston-super-Mare, Avon BS22 0JR  
(0934) 516246

**Electron**

**£199**

32K RAM (9K to 21K useable depending on graphics mode used) 32K ROM

**Keyboard:** typewriter style, 56 keys, space bar, no dedicated cursor control keys, no dedicated user definable keys though the numeric keys double with the use of a function key.

**Screen:** identical to BBC micro, except for lack of Teletext mode, although this is available as an option.

**Sound:** one channel through internal speaker, otherwise as BBC.

**Languages:** BBC BASIC is built in and FORTH and LISP are available. **Processor:** 6502A. **Operating system:** BBC. This makes Electron very compatible to the BBC and will run most of its software. **I/O:** none on basic machine though there is an expansion slot into which an expansion board can be plugged to give the same sort of interfacing options as the BBC but at extra cost. **Number sold:** no figures yet — this is a new machine. **Speed:** medium.

**Add-Ons:** with forthcoming expansion board the Electron should be able to use most of the add-ons that the BBC can accommodate. Some independent suppliers are producing items, but as this is a new computer only time will tell.

**Software:** a growing range as software houses convert BBC programs.

**Opinion:** as this computer is almost wholly BBC compatible with only some minor differences most of what I say for the BBC is true here except for the references to price. At this current low price this computer is good value for money.

**Acorn Computers,** 4 Fulbourn Road, Cherry Hinton, Cambridge CB1 4JN  
Cambridge (0223) 210111

**Lynx 48K**

**£225**

48K RAM (13.75K free) 16K ROM

**Keyboard:** good quality typewriter keyboard, 57 keys, space bar, optional single key keyword entry, no dedicated cursor controls or user definable function keys.

**Screen:** 40 character by 24 lines text, and 248 by 256 high resolution display in eight colours, user defined characters and lower case. There are one or two peculiarities: the screen cannot scroll and works on a plane system of colour generation and the characters are based on an unusual six by 10 matrix. The upshot is that any access to the screen is very slow. It can be speeded up slightly by only using one of the primary colours.

**Sound:** six-bit digital to analogue converter giving one sound channel covering five octaves driven through internal speaker, output available to external amplifier.

**Languages:** Lynx BASIC (included) is an excellent implementation, well structured, good access to machine code with a machine code monitor. Procedures are catered for as well as other structured programming functions. However it does leave something to be desired with some of the more basic functions of BASIC (sorry). For example, arrays can be only one dimensional. Tape recorder control by the computer is also lacking. **Processor:** Z80A. **Operating System:** custom, although CP/M is promised when Lynx is given disc drives.

**I/O:** Cartridge port, serial printer port. Parallel printer port extra, joystick interface extra. **Number sold in UK:** not available but not many, though number growing. **Speed:** fast when not accessing screen but slow when printing or plotting.

**Add-Ons:** Joystick interface, parallel printer interface, printer lead, disc drives promised with CP/M, all available from Computers. Nothing much from independent suppliers.

**Software:** Little available, but increasing

**Opinion:** a much underrated machine suffering from having a funny BASIC and odd screen handling. A very nice machine on its own merits, it is expandable to 128K or 96K. The 128K machine has an 80 column display and has CP/M, opening up the opportunity to use a vast range of business software using this operating system. The 48K and 96K Lynxes run Lynx DOS.

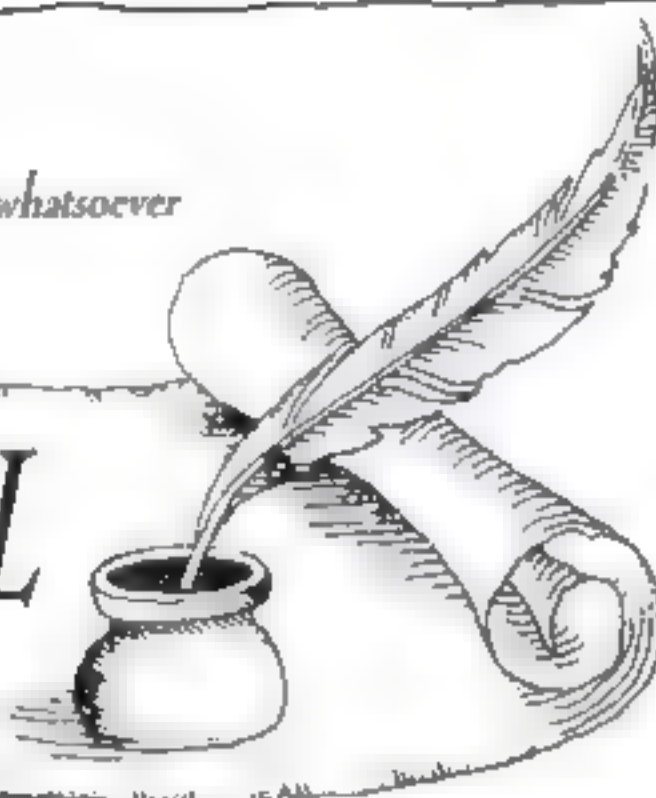
**Computers,** 33A Bridge Street, Cambridge CB2 1UW  
Lang Communications, 01-582 5128



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**Sharp MZ700**

**£249.95**

61K RAM 8K ROM

**Keyboard:** 69 typewriter-style keys including five function keys, four cursor keys, space bar  
**Screen:** 40 columns by 25 rows text, 80 by 40 graphics. Eight colours

**Sound:** single channel, three octaves

**Languages:** Extended BASIC cassette included in price. Also available: Pascal, Fortran, three versions of Pascal, two assemblers. **Processor:** Z80A. **Operating system:** custom  
**I/O:** two joystick ports, video, RGB, port for Sharp printer/plotter and other printers. **Number sold in UK:** a new computer which Sharp says has sold 20,000 in first month  
**Speed:** fast

**Add-ons:** four-colour printer/plotter, Sharp cassette recorder (although most domestic recorders will work), joysticks, other Sharp printers. Coming in January: I/O box for RS-232C, floppy discs etc

**Software:** Sharp says 200 titles on cassette are available now starting at an inexpensive £3.95. Ten games are supplied with the computer. Four software houses are said to be writing for the MZ700. Software for the Sharp MZ-80K is totally compatible, although not in colour. And software for the MZ-80A and B needs little modification to work on the new computer

**Opinion:** The MZ700 is a stylish design and the printer/plotter and Sharp cassette recorder slot into the main unit to give a smart appearance with no trailing wires. It is what has been dubbed a "clean" machine — the language must be added before programming can begin. It means that machine code programs can use nearly all of the 64k of RAM. It does mean, however, that you must wait for the BASIC to be loaded from cassette. One 4K ROM handles 512 characters and another deals with the monitor. However, the MZ700 faces stiff competition from the likes of the Commodore 64, which is cheaper

**Sharp,** Thorpe Road, Newton Heath, Manchester 10  
061 205 2311

**Spectravideo SV 328**

**£274.95**

80K RAM (64K approx useable) 48K ROM

Similar to the SV 318 model (£198.95), but with memory — expandable to 256k — and with a typewriter style keyboard. Aimed to appeal to small businesses, all peripherals for the cheaper model work on this version

**CK Computers,** 6 Devonia House, High Street, Worle, Weston-Super-Mare  
(0934) 516246

**Memotech MTX500**

**£275**

32K RAM (30k useable) 32K ROM

**Keyboard:** 58-key typewriter-style keyboard, plus 12-key numeric/cursor keypad and eight function keys. Set in black extruded aluminium casing

**Screen:** 40 rows by 24 columns text, 256 by 192 pixels hi-res, 16 colours

**Sound:** three channels plus noise, eight octaves

**Languages:** Three languages are built in. MTX BASIC is similar to Microsoft's with extensions, mainly for graphics. Logo is the easy-to-use language used mainly in schools. Noddy is Memotech's interactive language. Built-in ROM routines include an assembler/disassembler. **Operating system:** custom. **Processor:** Z80A. **I/O:** RGB for a monitor, hi-fi sound, two joystick ports, Centronics interface. **Number sold in UK:** computer only recently launched. **Speed:** medium to fast

**Add-ons:** available now — RS-232 board, 8K EPROM cartridge, 64K of plug-in RAM. Promised soon — Pascal on cartridge, 80-column board, "Silicon Disc" with 16 megabyte of RAM, floppy and hard discs running under CP/M, the operating system used for thousands of business programs

**Software:** six cassettes available now and Memotech says dozens more will be available soon, on tape and cartridge. Two programs are free with each computer

**Opinion:** An all-British designed and manufactured computer from the people best known for their ZX81 and Spectrum additions. Many of the ideas in the MTX computers came from a business micro which an associate company was developing. Robust with a lot of features as standard and aimed at the top end of the home computer market, also occupied by the likes of the BBC micro.

**Memotech,** Station Lane, Witney, Oxon OX8 6BN  
(0993) 2977

**Lynx 96K**

**£299**

96K RAM (37.5K useable) 20K ROM

Similar to the 48K Lynx except for increase in user RAM and the BASIC has extensions to drive a printer and increased ability to handle sound. The 48K Lynx can be upgraded for £89.95

**Computers,** 33A Bridge St, Cambridge CB2 1UW  
Lang Communications, 01-582 5128

**Genie II 16K**

**£299.99**

16k RAM (15k useable) 16k ROM

**Keyboard:** typewriter style, 71 keys, space bar, dedicated cursor control keys, four user definable function keys

Apart from improved keyboard and lack of internal cassette deck, identical to Genie I

**Lowe Computers,** Chesterfield Road, Matlock, Derbyshire DL4 5LE  
Matlock (0629) 4057 4995

**Atari 800**

**£299.99**

48K RAM (amount useable depends on graphics mode in use) 16k ROM

Similar to 800XL and 600XL machines. The differences are the screen has only 11 modes instead of 16, it has two more joystick ports than the 600XL and the 800XL, the amount of memory, and the sound is handled slightly differently

See also Atari 400, 600XL and 800XL  
**Atari,** Railway Terrace, Slough, Berks SL2 5BZ  
Slough (75) 33344



# SOFTWARE FOR SPECTRUM AND ZX81

## OUR POLICY

We aim to create programs which you will keep on using until your computer wears out. You won't find our programs in the top ten and you will look in vain for colour adverts and fancy packaging. Nevertheless we have built up a solid following of discerning users in all parts of the world. Read the reviews of our programs if you can find them. We have been consistently praised for quality originality and value for money

## WHAT DO YOU GET?

The bulk of our cassettes are now made by the factory which produced the Horizons tape. Programs are recorded twice and carry on the reverse side an audio narrative to supplement the operating instructions. Where appropriate, cassettes are accompanied by a comprehensive and clearly written instruction manual

## 48K SPECTRUM

"Day of the Match" £5.00

Fascinating and realistic simulation of an entire football season. Name your own teams if you wish (English league provided on cassette). Rate each team from one to nine in various success categories such as attack, defence, manager, etc. Watch the season unfold. Includes knock-out cup option

"Ball by Ball" £5.00

Simulates a test match series or one day international series. Set up your own teams and pool of players (England v Australia provided). Rate each player's capabilities as batsman and bowler on a one to nine scale for qualities such as talent, effort, etc. Pick your teams and play the match. Electronic scoreboard shows progress of a match. Full supporting score card and series averages.

"Superplan Generator" £12.00

Spreadsheet type program with variable column width and variable number of columns. Lets you sacrifice columns you don't need to get more lines

"Superplan Pack 1". Business Applications £7.00

Ready made applications programs for sales day book, purchase day book, cash book and petty cash book.

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Ready made applications programs for home budgeting, nutrition tables, car running costs and bank statements.

"Superview" £5.00

Simple but effective information display. Up to 42 pages of text and low-res graphics. Access pages on demand or run in perpetual 'side-show' mode. Full facilities to create your own pages and build up an information library on cassette.

## 16K SPECTRUM

"Superdraw" £5.00

Create full colour high-res pictures and store them on cassette for use as titles or background screens in other programs. Or just have fun doodling and build up a cassette library of your creations. Slide show option allows you to review pictures stored on cassette

## 16K ZX81

Here is a selection of titles still available for ZX81. Send see for illustrated catalogue. These are the ZX81 equivalents of the Spectrum programs described above. Although similar in concept the specifications fall short of the descriptions given for the Spectrum.

|                 |                                  |       |
|-----------------|----------------------------------|-------|
| FOOTBALL-LEAGUE | Forerunner of "Day of the Match" | £4.00 |
| TEST MATCH      | Forerunner of "Ball by Ball"     | £4.00 |
| "VIDEO-PLAN"    | Forerunner of "Superplan"        | £7.00 |
| "VIDEO-AD"      | Forerunner of "Superview"        | £7.00 |
| "VIDEO-SKETCH"  | Forerunner of "Superdraw"        | £7.00 |

Many independent computer shops now stock our products but we continue to supply by mail order on an off-the-shelf, immediate delivery basis. Prices include VAT, post and packing in UK. Add a bit for postage if you live in Outer Mongolia. (Note "Day of the Match" not available until late October 1983.)

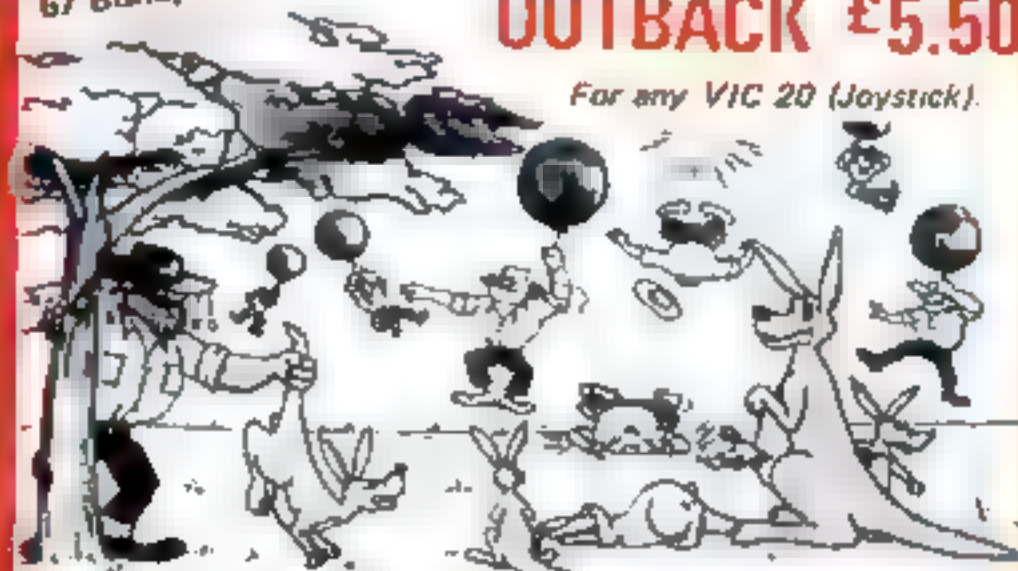
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# Mysterious Adventures

## WHAT ARE MYSTERIOUS ADVENTURES?

**MYSTERIOUS** (Adjective) - "Baffling, full of mystery, strange or unaccountable"

**ADVENTURE** (Noun) - "An enterprise full of risk or danger, an experience of unforeseen events endangering the participants life, a gamble on failure or success"

To start play on a MYSTERIOUS ADVENTURE is to take a step out of the world of reality and into the world of the imaginary. You will find that these computer generated adventures are not as simple as they seem, problems seldom come easy.

By typing in simple commands in plain English you can "talk" to your computerised guide and tell it what your next actions are to be.

MYSTERIOUS ADVENTURES are designed to be a challenge to you. You will find that the more you play, the more you will enjoy it. You will find that the more you play, the more you will enjoy it. You will find that the more you play, the more you will enjoy it. You will find that the more you play, the more you will enjoy it. You will find that the more you play, the more you will enjoy it.

As MYSTERIOUS ADVENTURES progress, you will find that the more you play, the more you will enjoy it. You will find that the more you play, the more you will enjoy it. You will find that the more you play, the more you will enjoy it. You will find that the more you play, the more you will enjoy it. You will find that the more you play, the more you will enjoy it.

## NEW DEVELOPMENTS ON MYSTERIOUS ADVENTURES

Over the past few years, Adventure programs on Computers have almost always been presented in the classic "Text Adventure" format. The main reason for this is that the scope of the adventure generated by such an approach is limited only by the player's own imagination. One of the main reasons for the lack of interest in these programs is that the scope of the adventure could at best be only very limited in scope.

Instead of this, we have now developed a new format for MYSTERIOUS ADVENTURES. This new format is designed to be a challenge to you. You will find that the more you play, the more you will enjoy it. You will find that the more you play, the more you will enjoy it. You will find that the more you play, the more you will enjoy it. You will find that the more you play, the more you will enjoy it. You will find that the more you play, the more you will enjoy it.

In addition, the Adventures now features full sentence decoding as standard. These mean that you are no longer restricted to inputting single words. You will find that the more you play, the more you will enjoy it. You will find that the more you play, the more you will enjoy it. You will find that the more you play, the more you will enjoy it. You will find that the more you play, the more you will enjoy it.



The "New style" MYSTERIOUS ADVENTURES are currently available for the IBM SPECTRUM COMMODORE 64. More releases are planned this year which will include DRAGON 32, ORIC-1, APPLE II & IIe, ATARI LYNX, MATTEL AQUARIUS, IBM PC etc. Please write or phone for availability.



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## Dragon 64

£225

64K RAM (up to 64K useable) 16K ROM

Dragon's new model offers three modes of operation: an emulation of the Dragon 32, Extended BASIC with 48k of useable RAM or as what the company calls a "soft machine." In this mode the BASIC is switched out for machine code programs or to add languages like Pascal. An RS-232 interface is standard and the OS/9 multi-user operating system can be added. A small amount of disc-based software, including business applications, is available at present.

Dragon Data, Kenfig Industrial Estate, Port Talbot, West Glamorgan SA13 2PL  
(0656) 744700



## Commodore 64

£229

64k RAM (40k useable) 20K ROM

**Keyboard:** typewriter quality, 67 keys, space bar, dedicated cursor controls, four user definable function keys although full use of them can only be had through an expansion program.

**Screen:** 40 columns by 25 rows, 16 colours, all characters user definable, lower case, inverted output, two character sets. There are four different text modes but the format is the same for all, the only difference is in the handling of the colour. There are two graphics modes giving 320 by 200 and 160 by 200 resolutions in 16 colours. The difference is to do with the colour - one mode uses the attribute system, similar to the Spectrum, the other uses a palette system where each dot is its own individual colour, similar to the BBC or Dragon computers. Unfortunately the BASIC does not support the graphics so you must write your own routines or buy a BASIC extension. Modes may also be mixed. Eight sprites are available and although the BASIC does not support these directly instructions are given in the manual on how to achieve them.

**Sound:** three channel music and noise channel music synthesizer. Full envelope control and waveform selection. BASIC does not support sound directly although, like the sprites, instruction is given in the manual on how to use sound.

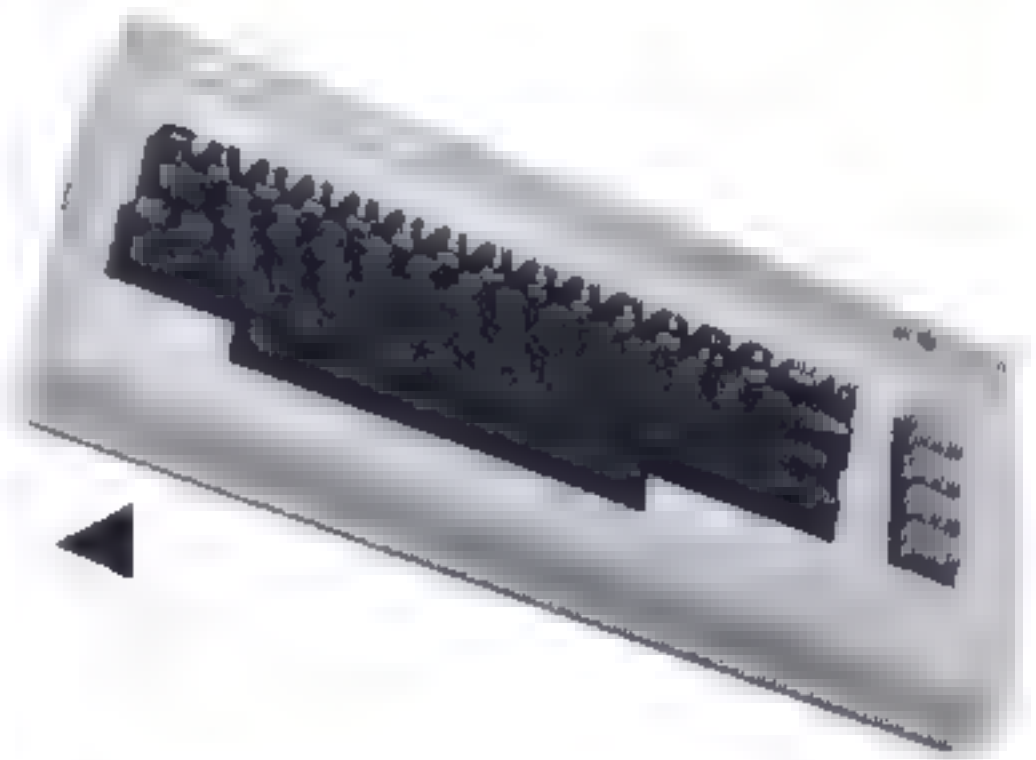
**Languages:** Commodore BASIC supplied. Simon's BASIC, Forth, Pilot, LOGO, Pascal available from Commodore along with BASIC compiler. **Processor:** 6510 (6502 compatible with memory banking), 780 available as option. **Operating System:** Commodore Kernel. **I/O:** IEEE 488 serial BUS, RS232, user port, cartridge port, two Atari-type joystick ports, four analogue to digital converters for paddles or proportional joysticks. **Number sold in UK:** 150,000. **Speed:** medium.

**Add-ons:** all of the VIC-20 add-ons produced by Commodore will fit. Others are exclusive to the 64 that involves the cartridge port, like the 780 sound processor with CP/M. There is also a speech synthesizer using the music synthesizer and several other options, including 32 Megabyte hard discs and daisy-wheel printers. Many add-ons available from independents.

**Software:** there is now quite a lot of software around, both for games and other applications. With business software and the vast amount of decent peripherals, the Commodore 64 is one of the few computers which can be seriously considered as an effective business micro as well as for use at home.

**Opinion:** an excellent computer and the available commercial software makes good use of its features. The big disadvantage is that the BASIC is simple, making it hard to write your own programs using the sophisticated features. Simon's BASIC, on cartridge, goes some way towards curing this. On the other hand, it is easy to use and memory space is not used to provide fashionable features at the expense of the functions you really need. It is almost totally compatible with the PET series of computers and the massive base of software that provides. Commodore's own cassette recorder must be brought at extra cost. Although interfaces to domestic recorders do exist, it is wise to go for Commodore's reliable recorder.

Commodore Business Machines, 675 Ajax Avenue, Slough, Berks SL1 4BG  
Slough (75) 74111



## Tandy Colour

£239.95

16K RAM 8K ROM

**Keyboard:** calculator type, 53 keys, space bar, no dedicated cursor control keys or user definable function keys.

**Screen:** 32 columns by 16 rows in two colours for text and eight colours for block graphics. No user definable graphics. Hi-res graphics are only available with Extended BASIC at extra cost.

**Sound:** one channel covering eight octaves. For full control over sound Extended BASIC is needed.

**Languages:** Microsoft BASIC built in but Extended Microsoft Colour BASIC is available and this is really needed to make the full use of the machine's capabilities. OS/09 is available for use with discs giving access to many other languages in the same way as CP/M but in a smaller way.

**Operating system:** Microsoft's own, but compatible with Dragon 32. OS/09 available for discs. **Processor:** 6809E. **I/O:** Centronics printer port, two joystick ports, cartridge slot. **Number sold in UK:** Tandy refused to comment on number sold.

**Speed:** medium.

**Add-ons:** from Tandy there are printers, plotters, an RS232 cartridge, disc drives and joysticks. This machine is not well supported by independents due to the arrival of the Dragon.

**Software:** a range from Tandy stores, plus independents who also write for the Dragon.

**Opinion:** this machine, when expanded, is virtually the same as the Dragon except Extended BASIC is included in the Dragon. The Dragon keyboard is a real one, the Dragon has twice the memory capacity and, most surprisingly, it is a lot cheaper. So if you are considering buying the Colour Computer then consider the Dragon instead. Otherwise my opinion is the same as for the Dragon as the machines are so similar.

Tandy, Tameway Tower, Bridge Street, Walsall WS1 1LA  
Walsall (0922) 648181



## BUYERS' GUIDE

### Memotech MTX512 £315

64K RAM (62K useable) 24K ROM

Identical to the MTX500 (£275), but with more RAM  
Memotech, Station Lane, Witney, Oxon OX8 6BX  
(0993) 2977

### Nascom 2 £327.75

2K RAM (800 bytes useable) 12K ROM

**Keyboard:** 57 keys, typewriter style  
**Screen:** monochrome, 48 columns by 16 rows, block graphics  
**Sound:** none

**Languages:** Microsoft BASIC. Operating system: custom  
**Processor:** Z80A I/O RS-232 and eight way input-output  
**Number sold in UK:** 100,000

**Add-ons:** 64K and 256K RAM boards, I/O which also adds clock and extra RS-232 interface, floppy disc control board video controller to add hi-res and colour, 5 $\frac{1}{4}$  inch single and twin disc drives. Plus Lucas approved products from independent software: Lucas says a lot is available

**Opinion:** This computer is for the serious hobbyist. It comes as a keyboard and board. You have to either case it yourself (the Lucas case costs £100) — or get a dealer to do it for you. You would also have to add memory; you cannot do much with 800 bytes. Computer was first made in 1979 and taken over by Lucas about two years ago. The Nascom 2 can also be bought as a kit for £258.75. The Nascom 3, ready-built with 48k of RAM, costs £631.35

Lucas Microcomputers, Welton Road, Wedgenock Industrial Estate, Warwick CV34 5PZ  
(0926) 487733

### Genie I 16K £330.05

16K RAM (15K useable) 13.5K ROM

**Keyboard:** typewriter style, 54 keys, dedicated cursor control keys, no user definable function keys, space bar  
**Screen:** 32 or 64 columns by 16 lines, no colour, no hi-res, no user definable characters. Inverse available, lower case, pixel graphics gives 148 by 48. Optional hi-res board gives 384 by 192.

**Sound:** one channel through internal speaker  
**Languages:** Microsoft BASIC, Pascal, Fortran, Cobol, Forth, APL, and PL1 are available from Lowe. **Processor:** Z80  
**Operating System:** custom included but various available including CP/M and I/DOS for disc drives. Compatible with the TRS-80 model II I/O: two cassette ports, otherwise none included but expansion box has printer interface. **Number sold in UK:** a reasonable amount, but to this must be added the vast number of TRS-80s that have been sold as the Genie is virtually identical in operation. **Speed:** slow to medium

**Add-ons:** not many due to the decline of this type of computer and the rise of the colour hi-res machine

**Software:** Large selection, mainly from Tandy  
**Opinion:** this type of machine was very popular in its day and as such has a larger user base, and this gives it a wide range of software. With the appropriate adaptor Tandy peripherals will work. A large sturdy machine that includes its own tape deck and is also reasonable for small business use

Lowe Computers, Chesterfield Road, Matlock, Derbyshire DE4 5LE  
Matlock (0629) 4057/4995

### Genie II 48K £341.55

48K RAM (47K useable) 16K ROM

Except for increase in memory, identical to 16K Genie II  
Lowe Computers, Chesterfield Road, Matlock, Derbyshire DE4 5LE  
Matlock (0629) 4057/4995

### Genie I 48K £365.70

48K RAM (47k useable) 16K ROM

Identical to 16K Genie I except for the price and memory and the ability to run certain operating systems that will not fit on the 16K version.

Lowe Computers, Chesterfield Road, Matlock, Derbyshire DE4 5LE  
Matlock (0629) 4057/4995



### BBC model B £399

32K RAM (28k to 9k useable depending on graphics mode used) 32K ROM

**Keyboard:** typewriter style, 73 keys, 10 user definable function keys, dedicated cursor control keys, space bar  
**Screen:** very complex. The simplest mode is Teletext compatible and gives eight colours, flashing characters, double height, and block graphics. Text is 40 columns by 25 lines. There are seven other modes of screen operation ranging from 640 by 256 hi-res in two colours with 80 by 32 text to 160 by 256 hi-res in eight colours with 20 by 32 text with eight flashing colours. All 256 characters are user definable in all but the Teletext mode.

**Sound:** three channel music with a noise channel through internal speaker. Full envelope control is available from BASIC  
**Languages:** BBC BASIC is included — a very comprehensive implementation. An assembler is also built in for machine code access. Forth, Lisp and BCPL are also available. **Processor:** 6502A. **Operating system:** BBC. **I/O:** RS432 and Certronics printer ports. Four analogue to digital converters for joysticks etc. Eight bit programmable user port. The Tube allows connection of second processors and so on to the 1 MHz bus. Disc interface, Econet networking, speech synthesizer can be added. **Number sold in UK:** 150,000. **Speed:** fast.

**Add-ons:** a great deal available from independents. However, Acorn has been slow to provide support and at present only disc drives, Econet and speech synthesizer are available. But Acorn are promising other things.

**Software:** a very large well written range available, including a lot from Acornsoft, the maker's software arm. Many educational programs of varying quality.

**Opinion:** the BBC is an excellent machine if you ignore the high price. Support from independent suppliers is superb, but Acorn has been slow on the hardware side. The keyboard is very good and there is a useful set of function keys. The screen uses split cursor screen editing which is the next best thing to full screen editing but not quite as easy to use. The BASIC is excellent and makes good use of all the hardware features. This computer is used by about 75 per cent of all secondary schools. So it is good for education as well as games. It also makes a good business computer, particularly with networking available for the future. A good all rounder.

Acorn Computers, 4 Fulbourn Road, Cherry Hinton, Cambridge CB1 4JN  
Cambridge (0223) 210111



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**Galactic Abductor Spectrum**  
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Anirog, 8 High Street, Horley, Surrey

Space hawks fly across the screen and lay eggs which hatch upon landing and try to devour you. The birds then pass on and snatch up a human and attempt to fly off with them.

All you have is a laser base with which to shoot them down but beware, they need two shots to kill them, although the human is freed after the first. If you miss then all you see of the poor being is his skull fall from the sky (yuk).

That, in brief, is the plot and it sounds more exciting than the

game proved to be.

The problems I found were that more than half the bullets went straight through the birds without leaving a mark.

After losing all four of your lives, you have to use the same keys to enter your name in the high score table, which makes it a very fiddly business to say the least.

The table itself was only displayed for a fraction of a second and nothing I could do would keep it on the screen long enough to read.

Although the graphics were adequate, I wasn't much inclined to play this game again. N.B.

|                 |      |
|-----------------|------|
| instructions    | 45%  |
| playability     | 80%  |
| graphics        | 100% |
| value for money | 100% |



**Firehawks**  
32K BBC £6.95

Postern, PO Box 2, Andoversford, Cheltenham, Glos GL54 5SW

Firehawks is yet another space invaders type game, and a rather inferior one too.

The firehawks descend upon you in ever-increasing force until they finally break through your plasma screen, whereupon you must blast them with your laser guns. Sounds familiar?

If a firehawk should land, then it mutates into a phoenix and rises from the ashes of your planet — an impressive piece of graphics on the first two or three occasions.

The instructions in the program are brief — quite tightly, because there is very little to do

You can of course choose the pace of the game and the faster speeds are certainly quite frantic. I found the laser controls rather imprecise even at the easiest level though. A league table of scores is maintained too.

Loading was faultless, and indeed the program had no apparent bugs. The graphics were quite reasonable.

Perhaps if this program has been released a year ago it might have been worth considering, but today there is so much software available in a similar vein, much of it far superior, that I cannot honestly recommend this one. J.P.

|                 |     |
|-----------------|-----|
| instructions    | 70% |
| playability     | 50% |
| graphics        | 80% |
| value for money | 50% |



**Look out — there's an alien about**

Those aliens are up to their old tricks in this selection of games. Before you get your laser gun out, though, read our reviewer's ratings

**Defend the Cities II**  
TI-99/4A plus MiniMemory  
£14

Intersoft, from Stainless Software, 10 Alstone Road, Stockport

This fairly addictive game involves the defence by you of the "five most important cities on the planet Earth" against up to four bombs dropped by an unsporting enemy alien. The cities in question are New York, Lubbock, Chicago, Washington and Los Angeles.

There are four levels of play, relating to speed of descent, although you can select from

The controls of your defending ship, operated from the keyboard, only become active after the last bomb is released, so at higher skill levels there can be quite a sense of urgency about the game.

You can fire in only one direction but your ship can rotate through 360 degrees in 45 degree steps and can move in the direction it fires.

This control can lead to some quite effective displays as you swoop down on an alien or a bomb, gun blazing. P.B.

|                 |      |
|-----------------|------|
| instructions    | 95%  |
| playability     | 100% |
| graphics        | 95%  |
| value for money | 50%  |



**Zarquon**  
TI-99/4A £6

From Stainless Software, 10 Alstone Road, Stockport, Cheshire

The terse but informative documentation for this complex and rather challenging game remarks that all the console memory is required — hardly surprising when one line alone consists of 107 REMs.

All the ingredients for an absorbing game are here — perhaps too many for comfort. Use of either the keyboard or a joystick for control is given, and the graphics are colourful.

The aim is to protect three 'humanoids' from a fate worse than death, occasioned by contact with an alien ship's mutative secret weapon, and the dice seem

loaded heavily against your success.

You begin with an armada of three ships, and you can lose them by colliding with something, being shot by an alien, allowing an alien ship to get through to clobber a humanoid, allowing your engine to overheat, and being got at by a 'killer mine'.

There are also 'invisible craft' whose presence is announced naturally enough, by a sound described as 'Boing, boing'. P.R.

|                 |     |
|-----------------|-----|
| instructions    | 80% |
| playability     | 85% |
| graphics        | 80% |
| value for money | 65% |



**Defend the Cities**  
TI-99/4A (Extended BASIC)  
£14

Intersoft, from Stainless Software, 10 Alstone Road, Stockport

This is the Extended BASIC version of the MiniMemory Defend The Cities II, and is different in several respects.

You have the option of using either the keyboard or joysticks, there are no skill levels but still four levels of difficulty.

Although you can fire the length of the screen, as in DTC II, the beam is only visible for part of the way. After three or so continuous salvos you are momentarily informed "lazer

overheated" but not to worry, your "lazer" starts working again almost immediately.

You can still fly about the screen, although of course the controls are not as responsive, and there is a different trick which can at times make a bomb 'miss' the city — very devious.

If you crash your ship into either a bomb or an alien, or a bomb hits the city, the game ends and the current highest score is displayed. Remember that because this module is not battery-backed the highest score is not retained. P.B.

|                 |      |
|-----------------|------|
| instructions    | 95%  |
| playability     | 80%  |
| graphics        | 100% |
| value for money | 40%  |





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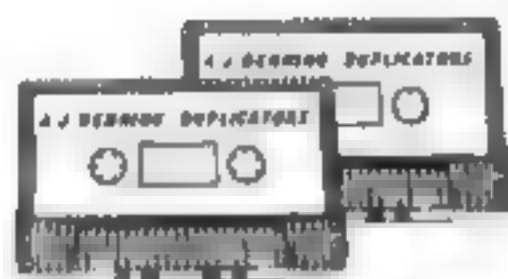
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over 25 years and proving itself on EVERY ONE  
OF THOSE TWENTY-FIVE YEARS.

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achievements so far, as given to you above

A GRAND TOTAL of 8,201, yes 8,201 POOLS  
DIVIDENDS, including 765 FIRST DIVIDENDS.

My Pools Winnings Dividend slips now number so  
many, that they fill a very large suitcase and will  
stand as my evidence of all claims in ANY COURT  
OF LAW IN THE WHOLE WORLD.

Taking just the past 25 years into consideration, I  
have won ON AVERAGE over 328, (THREE  
HUNDRED AND TWENTY-EIGHT) Pools  
Dividends EVERY YEAR — or — AN AVERAGE  
of over SIX DIVIDENDS EVERY WEEK for  
TWENTY-FIVE YEARS.

You have my absolute Guarantee of the complete  
authenticity of every claim, cheque, document, letter,  
etc, contained herein.

Don't take my word for it, read what people write about me and my method:—

I won on Letters last weekend. It was not a big sum, but all the same it was a very nice  
surprise for me. J.C., Lancs.

I appreciate the straightforward method you adopt, which is such a contrast to the  
rubbish of misrepresentation which is so common in the Betting World, by unscrupulous  
and self-proclaimed charlatans. C.H., Devon

Winnings cheque received today, sincere thanks. D.N., Devon

I congratulate you on your achievement. R.R., Wales

I should like to thank you for a most exciting season and look forward to hearing from  
you again. J.C., Hants.

I would like to acknowledge cheque and say how much I appreciate your integrity.  
J.M., Scotland

Many thanks for your system, it is all you say and more. J.C., Lancs.

Your wonderful system won me £3,527. I intend to visit London soon and will be able to  
meet and see you personally. (Overseas Check) P.M., Kampala

Many thanks for trying so hard to please us all, your brother should be thanked also.  
One of our daughters, WHOSE HUSBAND YOU HELPED ENORMOUSLY,  
has just phoned, she and her family have just spent a lovely holiday in Spain.  
K.R., Isle of Man.

I do have losing weeks, but ON AVERAGE my  
winnings show over SIX DIVIDENDS EVERY  
WEEK for the past 25 years.

I know that you are now utterly flabbergasted, it  
always happens to everyone with whom I come into  
contact. Please just sit back and imagine for a  
moment my FIRST DIVIDEND was alone — they  
now number 765 (seven hundred and sixty-five) and  
will probably be even more by the time this  
advertisement appears in print.

I AM NUMBER ONE IN THE WORLD AND  
NO ONE DISPUTES IT

For as long as I continue to enter the Football Pools  
my wins will continue. I have already said, they  
apply, with equal success to both English and  
Australian Football Seasons.

I intend to release a STRICTLY LIMITED  
NUMBER of copies of my cassette — DO NOT  
DELAY AND FIND YOU ARE TOO LATE, in  
which case I would have to refund your money

I am so confident of YOUR success that if do not  
win at least THREE FIRST TREBLE CHANCE  
DIVIDENDS in the first 20 weeks of entering, I will  
completely cancel the balance of the purchase price  
and you do not have to pay me another penny, at any  
time, no matter how vast your winnings

I only wish that space would allow me to give you  
photographs of my winnings slips, cancelled cheques,  
etc, but it is of course impossible — they now  
number 8,201 dividends. I have however given JUST  
A FEW EXTRACTS from ORIGINAL LETTERS  
I hold from my small Clients.

I am the Inventor and Sole Proprietor of my method,  
Registered as EUREKA — ("I have found it"). I am  
known as The Professor in Pools Circles — I am of  
the Highest Rank in Forecasting — this is beyond  
dispute. I am marketing a limited number of  
Computer Cassettes, under my Registered Company  
— FOOTBALL ENTERPRISES

My usual charge for a copy was £75, but for this  
SPECIAL REDUCED PRICE OFFER I will send  
you a copy, for £20, (twenty pounds) ONLY,  
plus your Promise to pay me the balance of £55  
— ONLY IF YOU WIN AT LEAST THREE  
FIRST TREBLE CHANCE DIVIDENDS IN  
YOUR FIRST 20 WEEKS OF ENTERING —  
otherwise you owe me NOTHING FURTHER

This is surely proof absolute of my supreme and  
over confidence in my own abilities and in the  
capacities of my discovery. I could easily CHARGE  
£2,000 per cassette on the evidence I possess, but  
that would not be fair to everyone, which is what I  
want.

My method is WORLD COPYRIGHT, any  
infringement and immediate proceedings will be  
taken, without prior warning. It is truly ingenious  
and has stood the test of time.

My cassette is simplicity itself to operate and you'll  
be given FULL DETAILS for weekly calculating.  
Your entry need not involve you in any large weekly  
stakes, you can enter for as little as 25p, if you wish.

I charge NO COMMISSION on any of your wins —  
no matter how BIG they may be

I realised a long time ago, that it was no good sitting  
down and dreaming about winning the pools, so I  
burnt the candle at both ends, working late into the  
night, occasionally RIGHT THROUGH THE  
NIGHT, I KNEW there was a way, eventually it all  
paid off and has been doing so ever since

I am unable to vary my offer to anyone, so please do  
not request it, as I shall very easily dispose of the  
cassettes I have prepared and am making available

IMMEDIATELY I perfected my method I  
commenced winning right away, (first with just a  
little £163, the first week I used it), I HAVE  
NEVER LOOKED BACK SINCE, amongst all  
those dividends was one for over EIGHT  
THOUSAND POUNDS for just one eighth of a  
penny stake.

I will release a copy on cassette, to you, on receipt of  
the completed order form and your Signature  
thereon, confirming you will treat it in the  
STRICTEST CONFIDENCE between us and retain  
it for your OWN USE ONLY.

PLEASE NOTE:

If you happen to be the proud owner of a Computer,  
either that a Sinclair Spectrum, you can still  
purchase a copy of my method, for the same  
price and program it YOURSELF on to YOUR  
OWN COMPUTER — or even if you do not  
have a COMPUTER.

I sent in my FIRST entry last week and won 2nd and 3rd dividends, as you will see  
from the enclosed certificate. One more and I would have collected over £400 for FIRST  
dividend. Once I've won a few amounts I shall be starting from winnings and at 2p per  
line, A FIRST DIVIDEND last week as this would have been over £1,000.  
C.A., Yorks.

I am very interested indeed and enclose £20 herewith I agree to pay you the  
balance of £55 ONLY if I win at least THREE FIRST TREBLE CHANCE  
DIVIDENDS in my first 20 weeks of entering — otherwise I owe you NOTHING  
FURTHER at any time — no matter how much money I win. My Signature below  
is my Undertaking to retain complete and absolute confidence about the method.

Address \_\_\_\_\_

Signature \_\_\_\_\_

The Managing Director,  
Football Enterprises,  
'Ayrton',  
8 New Road,  
Haverfordwest, Pembrok.

Please tick if cassette is for:  
Sinclair ZX81 (16K)   
Sinclair Spectrum (48K)   
Any other Computer   
No Computer at all

HCW34



**MXcopy  
BBC £4.95**

Logic Systems, 129 High Street, Cherry Hinton, Cambridge

This utility program is a multi-mode screen dump for the Epson range of matrix printers, the MX80 type J, FX80 and RX80.

The program has two modes for dumps — for screen modes 0, 1 and 2 a black and white fast dump, while screen mode 3 allows a grey shading slow colour dump.

The graphics program has to have a few extra lines added. These instructions load and run the cassette every time you wish to dump a screen and here is a faulting — the program has to be loaded every time!

This is a slow job with cassette. However, at least Logic

Systems recorded the program on both sides of the tape so there is no delay in rewinding.

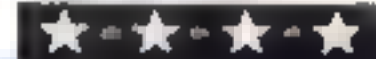
The instructions supplied are on the cassette insert and are good, but you will need very keen eyesight to read the small printing! The parameters that control the dumps are well explained, and give the user room for experimentation.

For the disc user it would have been nice to see instructions on how to transfer the program. This would speed up dumps and save the frustration of the slow loading of the cassette.

But it's a good value, adaptable and useful utility to have around.

J.H.

|                 |     |
|-----------------|-----|
| instructions    | 80% |
| ease of use     | 25% |
| display         | 50% |
| value for money | 80% |



**The  
Generators  
32K BBC £6.95**

Quick Silva, 13 Palmerston Road, Southampton SO1 1LL

This cassette actually contains two programs for the price of one.

The first enables you to define graphics characters using the VDC 23 statement. The instruction leaflet is professional and comprehensive, and the program is easy to use. Once defined, the characters can be saved and merged into your own program.

The second enables you to design teletext screens (mode 7) save them, and merge them into your own program. The instructions are again comprehensive but are included in the program only, though they can be

referenced at any time without losing the current design — a nice touch.

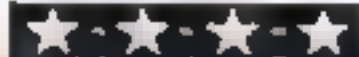
Ten screens can be saved in memory, according to the instructions, but I could not discover how to save more than one.

Additionally, the BREAK key did not function as described and necessitated a complete reload, losing any screen design in progress.

Both programs loaded faultlessly, though the cassette labels had been put on the wrong sides! Incidentally, there is no warning on the printed leaflet that the I/O operating system is required.

J.P.

|                 |     |
|-----------------|-----|
| instructions    | 90% |
| ease of use     | 80% |
| display         | 80% |
| value for money | 80% |



**Games  
Designer  
Spectrum 48K  
£14.95**

Quick Silva, Palmerston Park House, 13 Palmerston Road, Southampton SO1 1LL

I wonder how long it will be before someone writes a program to load a program without human intervention?

Well that day this program loads in every time using old fashioned methods. Then you are presented with a Wonderama by courtesy of superb programming skills.

There are eight resident games, with four different formats: invaders, asteroids, scramble or berserk as options, for any or all of them.

Everything, but everything, is

iterable by you, the now resident programmer. Re-defining all the characters, or sprites, used in any game is easy, as is controlling their movements.

Missile and bomb sounds, chip and alien explosions are all programmable, from frequency to duration.

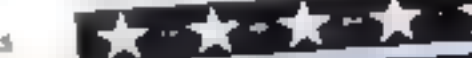
Attack patterns, movement, numbers, directions, scores etc, etc, are all under your control.

Not only can literally everything in your game be programmed, you can see, or hear, your own creations as they are happening.

When you are satisfied with your creation you can SAVE it on your own tape.

B.B.

|                 |      |
|-----------------|------|
| instructions    | 100% |
| playability     | 100% |
| graphics        | 100% |
| value for money | 100% |



**Programs of  
convenience**

Our reviewer panel finds out whether these programs live up to their claim to make the programmer's life easier

**Dungeon  
Creator/  
Dungeon  
Master  
Spectrum 48K  
£7.50**

Crystal Computing, 2 Ashton Way, East Herrington, Sunderland SR3 3RX

Two programs on one cassette. The Dungeon Creator allows you, within defined limits, to set the scenario for your own Dungeons and Dragons style game.

Up to 255 rooms, or locations, are allowed, and a variety of exits, in any direction, can be defined. The task is to collect rings, and you can set up to a total of 20 rings in different locations. Various other things, such as

weapons, poisons, arm-outlets can also be allowed to function, as can the number and variety of nasties.

Ample opportunity is given to alter things before you commit your creation to tape.

In order to play your game you must first load in the Dungeon Master, and then your SAVE'd game.

If you wish you may play the game already on the tape, which I did. I like D & D type games, but this one didn't appeal to me.

The action was slow, and I had to keep pressing 'any key to continue', which is not good programming practice.

B.B.

|                 |      |
|-----------------|------|
| instructions    | 100% |
| playability     | 60%  |
| graphics        | 60%  |
| value for money | 50%  |



**Zeus  
Assembler  
48K Spectrum  
£12.95**

Sinclair Research, 25 Willis Road, Cambridge CB1 2AQ

This program (hence this review) is aimed at those who understand the Z80 instruction set and the mechanics of assembly language.

There are two main command modes, assembler and editor, with a screen editor common to both of them. There are seven pseudo ops, or directives, including DEFB, DEFW, DEFMB/string, and a very useful DIS-Placement.

Either or both the source file and the object code may be SAVED, but both are eradicated from the assembler on SAVE.

Again from a list of reviewed

words, labels and comments may be used as you wish, following the rules go down.

Using the monitor mode there is an instant decimal-hex-decimal conversion and a very good MODIFY command, plus others.

There are 10 error report codes which are easy to follow, but the program is keen on the correct use of spaces.

For those who do not know any ROM routines, there are 10 useful routines resident in Zeus which you may call. This does mean, however, that any object code using any of these routines cannot be used as a stand-alone program.

B.B.

|                 |      |
|-----------------|------|
| instructions    | 100% |
| ease of use     | 85%  |
| display         | 90%  |
| value for money | 90%  |













Listing for Block Eleven

```

2990 REM *****
3000 POSITION U,N1:GOSUB 200:POSITION RNS+
3010 PICK=N1:GOSUB 200:RETURN
3020 PICK=N2:GOSUB 200:RETURN
3030 PICK=N3:GOSUB 200:RETURN
3040 PICK=N4:GOSUB 200:RETURN
3050 PICK=N5:GOSUB 200:RETURN
3060 PICK=N6:GOSUB 200:RETURN
3070 PICK=N7:GOSUB 200:RETURN
3080 PICK=N8:GOSUB 200:RETURN
3090 PICK=N9:GOSUB 200:RETURN
3100 PICK=N10:GOSUB 200:RETURN
3110 PICK=N11:GOSUB 200:RETURN
3120 PICK=N12:GOSUB 200:RETURN
3130 PICK=N13:GOSUB 200:RETURN
3140 PICK=N14:GOSUB 200:RETURN
3150 PICK=N15:GOSUB 200:RETURN
3160 PICK=N16:GOSUB 200:RETURN
3170 PICK=N17:GOSUB 200:RETURN
3180 PICK=N18:GOSUB 200:RETURN
3190 PICK=N19:GOSUB 200:RETURN
3200 PICK=N20:GOSUB 200:RETURN
3210 PICK=N21:GOSUB 200:RETURN
3220 PICK=N22:GOSUB 200:RETURN
3230 PICK=N23:GOSUB 200:RETURN
3240 PICK=N24:GOSUB 200:RETURN
3250 PICK=N25:GOSUB 200:RETURN
3260 PICK=N26:GOSUB 200:RETURN
3270 PICK=N27:GOSUB 200:RETURN
3280 PICK=N28:GOSUB 200:RETURN
3290 PICK=N29:GOSUB 200:RETURN
3300 PICK=N30:GOSUB 200:RETURN
3310 PICK=N31:GOSUB 200:RETURN
3320 PICK=N32:GOSUB 200:RETURN
3330 PICK=N33:GOSUB 200:RETURN
3340 PICK=N34:GOSUB 200:RETURN
3350 PICK=N35:GOSUB 200:RETURN
3360 PICK=N36:GOSUB 200:RETURN
3370 PICK=N37:GOSUB 200:RETURN
3380 PICK=N38:GOSUB 200:RETURN
3390 PICK=N39:GOSUB 200:RETURN
3400 PICK=N40:GOSUB 200:RETURN
3410 PICK=N41:GOSUB 200:RETURN
3420 PICK=N42:GOSUB 200:RETURN
3430 PICK=N43:GOSUB 200:RETURN
3440 PICK=N44:GOSUB 200:RETURN
3450 PICK=N45:GOSUB 200:RETURN
3460 PICK=N46:GOSUB 200:RETURN
3470 PICK=N47:GOSUB 200:RETURN
3480 PICK=N48:GOSUB 200:RETURN
3490 PICK=N49:GOSUB 200:RETURN
3500 PICK=N50:GOSUB 200:RETURN
3510 PICK=N51:GOSUB 200:RETURN
3520 PICK=N52:GOSUB 200:RETURN
3530 PICK=N53:GOSUB 200:RETURN
3540 PICK=N54:GOSUB 200:RETURN
3550 PICK=N55:GOSUB 200:RETURN
3560 PICK=N56:GOSUB 200:RETURN
3570 PICK=N57:GOSUB 200:RETURN
3580 PICK=N58:GOSUB 200:RETURN
3590 PICK=N59:GOSUB 200:RETURN
3600 PICK=N60:GOSUB 200:RETURN
3610 PICK=N61:GOSUB 200:RETURN
3620 PICK=N62:GOSUB 200:RETURN
3630 PICK=N63:GOSUB 200:RETURN
3640 PICK=N64:GOSUB 200:RETURN
3650 PICK=N65:GOSUB 200:RETURN
3660 PICK=N66:GOSUB 200:RETURN
3670 PICK=N67:GOSUB 200:RETURN
3680 PICK=N68:GOSUB 200:RETURN
3690 PICK=N69:GOSUB 200:RETURN
3700 PICK=N70:GOSUB 200:RETURN
3710 PICK=N71:GOSUB 200:RETURN
3720 PICK=N72:GOSUB 200:RETURN
3730 PICK=N73:GOSUB 200:RETURN
3740 PICK=N74:GOSUB 200:RETURN
3750 PICK=N75:GOSUB 200:RETURN
3760 PICK=N76:GOSUB 200:RETURN
3770 PICK=N77:GOSUB 200:RETURN
3780 PICK=N78:GOSUB 200:RETURN
3790 PICK=N79:GOSUB 200:RETURN
3800 PICK=N80:GOSUB 200:RETURN
3810 PICK=N81:GOSUB 200:RETURN
3820 PICK=N82:GOSUB 200:RETURN
3830 PICK=N83:GOSUB 200:RETURN
3840 PICK=N84:GOSUB 200:RETURN
3850 PICK=N85:GOSUB 200:RETURN
3860 PICK=N86:GOSUB 200:RETURN
3870 PICK=N87:GOSUB 200:RETURN
3880 PICK=N88:GOSUB 200:RETURN
3890 PICK=N89:GOSUB 200:RETURN
3900 PICK=N90:GOSUB 200:RETURN
3910 PICK=N91:GOSUB 200:RETURN
3920 PICK=N92:GOSUB 200:RETURN
3930 PICK=N93:GOSUB 200:RETURN
3940 PICK=N94:GOSUB 200:RETURN
3950 PICK=N95:GOSUB 200:RETURN
3960 PICK=N96:GOSUB 200:RETURN
3970 PICK=N97:GOSUB 200:RETURN
3980 PICK=N98:GOSUB 200:RETURN
3990 PICK=N99:GOSUB 200:RETURN
4000 PICK=N100:GOSUB 200:RETURN

```

```

2500 GOSUB 1100:POSITION U,N1:GOSUB 200:RETURN
2510 PICK=N1:GOSUB 1100:RETURN
2520 PICK=N2:GOSUB 1100:RETURN
2530 PICK=N3:GOSUB 1100:RETURN
2540 PICK=N4:GOSUB 1100:RETURN
2550 PICK=N5:GOSUB 1100:RETURN
2560 PICK=N6:GOSUB 1100:RETURN
2570 PICK=N7:GOSUB 1100:RETURN
2580 PICK=N8:GOSUB 1100:RETURN
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2990 PICK=N49:GOSUB 1100:RETURN
3000 PICK=N50:GOSUB 1100:RETURN
3010 PICK=N51:GOSUB 1100:RETURN
3020 PICK=N52:GOSUB 1100:RETURN
3030 PICK=N53:GOSUB 1100:RETURN
3040 PICK=N54:GOSUB 1100:RETURN
3050 PICK=N55:GOSUB 1100:RETURN
3060 PICK=N56:GOSUB 1100:RETURN
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3220 PICK=N72:GOSUB 1100:RETURN
3230 PICK=N73:GOSUB 1100:RETURN
3240 PICK=N74:GOSUB 1100:RETURN
3250 PICK=N75:GOSUB 1100:RETURN
3260 PICK=N76:GOSUB 1100:RETURN
3270 PICK=N77:GOSUB 1100:RETURN
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3370 PICK=N87:GOSUB 1100:RETURN
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3470 PICK=N97:GOSUB 1100:RETURN
3480 PICK=N98:GOSUB 1100:RETURN
3490 PICK=N99:GOSUB 1100:RETURN
3500 PICK=N100:GOSUB 1100:RETURN

```

# MIKRO-GEN

presents **TWO** great games from Saturn Developments

The chart-hitting

## Mad Martha



*Henry is the hen perked head of the domestic tale. One night Henry was home late. He steals his wages from his wife's purse and sneaks out of the house being careful not to wake the baby or trip over the cat and heads for the bright lights to have some fun. Trouble is he's out of luck. It's only a matter of time before his wife catches him. As Henry is getting in to his room he finds his wife Mad Martha has returned by absence. Hearing Henry's abandoned wife he has to keep her out of the house. It's a wild race to get out of the house before she catches him. Henry's wife is not to be outwitted.*

And now -

## Mad Martha II



*Time of the annual holidays and Martha decides to visit her old cousin Manu who is a waiter in a posh hotel in Barcelona. One afternoon Martha sets out on a bus trip with her son, young Arbutot, leaving orders to Manu to keep a eye on Henry. Unfortunately Mad Martha's cousin Henry has a Spanish penchant and has planned a secret rendezvous. Henry leaves the hotel, bringing with him a gun and a knife. He's a real wild one. He's hot on his trail. The adventure takes us through the thick and thin of a madcap chase taking in amongst other delights, a bull fight in which poor Henry is forced to play the leading role. Unwarranted laughs and fun for all the family.*

**\* FOR 48K SPECTRUM ONLY £6.95 Post & Packing 40p \***

*A game to invest in. Funny, genuinely original, and the graphics are great. Hit the key to begin, the Spectrum plays a real Hollywood-style movie theme tune, and the hunt is on!*

**Personal Computer News**

*Marvellous adventure, really dotty, a refreshing change from some of the doomladen programs encountered nowadays. A game where you won't get to the next stage without solving the present conundrum.*

**Popular Computing Weekly**

Available from retail outlets or direct from:  
**MIKRO-GEN, 1 Devonshire Cottages, London Rd, Bracknell RG12 2TD**    |||    **OR PHONE YOUR ACCESS/VISA NUMBER: (0344) 27317 (9am-5pm)**    |||



# Adventures in space and time

Our reviewers' verdicts on some new releases for adventurous micro owners

## Pirate 32K BBC £9.25

Chalkwell, Lower Cottage, Tonedale, Wells, Wiltshire

It is a two-part adventure aimed at young people, and featuring full colour graphics, animation and sound.

You are the captain of a pirate ship and you must see it through the sea, to find and find things with other ships to collect jewels and treasure.

If you successfully complete part 1, the computer will let you go on to part 2. The function keys are used for the commands, making it very easy for youngsters to communicate with the computer.

Instructions are displayed on the cassette insert, and more are available on request in the intro-

ductory program.

The displays are very colourful using a split-screen technique. The scene graphically at the top, using Teletext graphics, and the narrative at the bottom.

I personally would be more of the game, with a story but right for the youngsters who are likely to be playing the game.

Sound is used extensively although the repetitive sea shanty began to grate after a while. A sound on a CD tape would have been nice. A game SAVE facility is sensibly included.

More interesting and colourful than plain narrative adventures children should find lots to interest them here.

Instructions 90%  
playability 80%  
graphics 75%  
value for money 75%



## Death Mines Of Sirius Dragon £9.99

Phoenix Spireless House, 11th Watch Road, Premier, Middlesbrough

A special idea from Phoenix Spireless, this contains an adventure and an arcade game. You must play the arcade game and play well to receive clues to help you succeed in the adventure.

If I think you are a ham, find an arcade game to play. Without getting a ten on the score, you will not be given the code to allow you to even start the adventure.

The arcade game is a form of space rescue where you must find your rescue ship and save the clouds of a terraforming satellite.

on the landing pads below. Once landed, you must attempt to carry your passengers back to the ship in the top left hand corner of the screen. You must continue doing this until you have reached a certain score where clues to the adventure will be given.

The two cassettes come in a quality presentation pack and there was no trouble with loading. The adventure game part is a bit more to get into and provides quite a challenge.

What you get for your £10 is a boxed package of entertaining software. Phoenix must be congratulated for such an enterprising concept.

Instructions 80%  
playability 75%  
graphics 70%  
value for money 90%



## Hell's Temple 48K Oric £12

Kenema, 1 Marlborough Drive, Worle, Avon SB22 8DQ

The immortal ones of Satan and those brave enough to enter Hell's Temple collide in this intriguing adventure game in which more than 5 minutes await your foolishness in trying to find riches beyond dreams.

The monsters you will encounter include a man-eating mantis, Erinye's Devil, Vrock Demond and a jaculi; you may also find yourself dropping down deep pits, perhaps to acid pools, which usually reduces your score.

Unfortunately, because of the large number of monsters in the adventure, they are not illustrated

in what are part-text-part-graphics screen displays. The top half of the screen represents an area you are using and underneath are detailed your strength, spells, gold and floor levels in a constantly updating grid.

Decisions on whether to enter a room or enter combat with a monster are 1 for no, 1 for leave, H for help, 0 for uncovering the strength of opponents and D for detecting what is in a room through the use of your spells.

The combat routine is C for combat, S for spell, B for battle and R for retreat. If you are lucky with a these stages being clearly marked on the screen. S I

Instructions 90%  
playability 80%  
graphics 85%  
value for money 85%



## The Hobbit Commodore 64 £14.94

Melbourne House, 131 Trafalgar Road, London SE10

This is the Commodore 64 version of the Spectrum text graphics adventure based on the book written by J.R.R. Tolkien.

The object of the game is to get the gold and treasure hoarded by the evil Dragon and place it in the chest in your home. Gandalf the wizard and Florn the dwarf are your two main helpers.

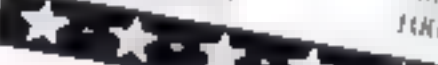
All the characters in the game react to the situations around them even when you are not there. They all have minds of their own and are independent of each other. So every time you solve a problem, you will face different problems and have to solve them

in different ways. The game is very well written. Some of the plot details will be described to you in a picture, others will be described in text descriptions.

The two colour text graphics that are used are of a reasonably high standard. The graphics are clear which is a display of recent times.

The game comes with a plot synopsis and descriptions of your progress if you use the plot synopsis. It is a good idea to remember to take notes where you were writing

Instructions 100%  
playability 100%  
graphics 100%  
value for money 100%



## White Crystal Dragon £9.99

Ramsk, 22 Argall Avenue, Slough, Berks

There are not many totally graphic adventures about so I viewed this one with interest.

White Crystal is a great adventure game that really does make good use of the capabilities of the Dragon. The program starts with a treasure theme song and a colorful title page.

The instructions are detailed but do not explain to you what really is in store as you start your quest for the fabled crystal.

You control a walking stick man and must travel around the screen trying to collect food, treasures and the vital sword.

There is the evil sword which you must avoid or you receive the punish-

ment of hearing the funeral dirge played out of tune by your Dragon.

Climbing up the top ladder of the screen will take you to a new, different screen with new perils to overcome.

If this game had been written in machine code and could run a little faster, then I would call it an arcade game - the graphics and the action are that good.

I have yet to succeed in getting the white crystal and expect to be playing this game for quite some time. Recommended.

Instructions 65%  
playability 80%  
graphics 88%  
value for money 70%





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# ZX81 PROGRAMMING

likes to use PLOT and UNPLOT.

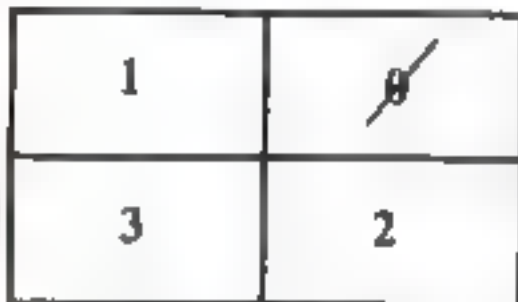
Assigning X and Y as PLOT co-ordinates, the subroutine returns the following variables:

L - line and C - column - the character in which the X,Y co-ordinate is stored.

Z - the character code at that L,C location.

P - 1 if the X,Y location is already PLOTTed, otherwise P = 0 (ie, if UNPLOTted or some other character).

Q is returned with a value 0 if no character is found at the X,Y co-ordinate with the L,C location, as defined in figure 1.



Anyone who is involved in serious work with PLOT and UNPLOT will recognise the value of this routine, and it is well worth the trouble to isolate and SAVE it separately to use in other programs.

Although it is quite fast as it is, I plan to write it into machine-code.

Another routine is likely to

```

360 LET X=XM
370 LET Y=YM
380 LET D=INT (RND*4)+1
390 FOR K=1 TO LEN B$
400 IF CODE B$(K)=D THEN GOTO 410
410 NEXT K
420 LET B$=B$+CHR$(D)
430 IF NOT CODE A$(1,D) THEN GO
TO 521
440 GOSUB 6
450 LET XM1=X
460 LET YM1=Y
470 FOR D=1 TO 4
480 LET X=XM1
490 LET Y=YM1
500 GOSUB 6
510 LET A$(2,D)=CHR$(128+(P=1))
520 NEXT D
530 LET Q=0
540 FOR K=1 TO 4
550 LET Q=Q+(A$(2,K)=" ")
560 NEXT K
570 IF Q<3 OR Y=41 THEN GOTO 61
    
```

Figure 1: Showing value of Q returned from subroutine 10, according to location of X,Y co-ordinate pair in relation to the character in which this occurs.

```

580 LET X=XM1
590 LET Y=YM1
610 GOTO 230
621 NEXT J
625 IF Y=41 AND CN>LEN C$/3 THEN
N GOTO 930
630 LET E=0
640 IF LEN E$=4 THEN LET E=255*
(CODE E$(3)-CODE E$(2)+
CODE E$(4))
650 LET R=2*INT (RND*CN/2)+1
670 LET X$=CHR$(INT (R/256)+CHR
$(R-256*INT (R/256)))
    
```

prove of interest to serious programmers starts at Line 670. This relates to the economic storage of two-byte values in a string.

Input to the routine is the variable R (a random number generated at Line 660). The routine scans D\$ looking for the two-byte code as translated into X\$(line 670).

The scanning process is by the bisection method, which is much quicker than searching through the string from beginning to end. Starting at approximately the middle of the string it bisects upwards if X\$(variable R) is greater than the value found, or downwards if it is lower, and repeats the process until it either finds the identical value, or finds two successive numbers, one lower and one higher than X\$(variable R).

In the former case, it jumps out of the routine at either line 780 or 885, in this case returning to line 660 to find another random number. If it does not find the number, it inserts it into the correct place in the string, and jumps to line 900.

I should mention that I have the Open University to thank for this valuable concept, despite the fact that I failed my maths course (miserably) with the O.U., I nevertheless learned a great deal that has been invaluable in my subsequent dealings with the ZX81.

```

680 IF LEN E$=4 THEN IF X$>E$(1
TO 2) AND X$<=E$(3 TO ) THEN GO
TO 650
685 IF LEN D$>CN-E-10 THEN GOTO
690
690 LET L=0
700 LET H=LEN D$
710 LET J=H
720 LET J=J+(J<1)
730 IF J>1 THEN GOTO 750
740 LET D$=X$+D$
750 GOTO 900
760 LET J=INT (J-(J-L)/2)
770 LET J=J-(J=2*INT (J/2))
780 IF X$>D$(J TO J+1) THEN GOT
O 660
790 IF X$>D$(J TO J+1) THEN GOT
O 840
800 LET H=J
810 IF L<H-2 THEN GOTO 730
820 LET D$=D$( TO J-1)+X$+D$(J
TO )
830 GOTO 900
840 LET L=J
850 LET J=INT (J+(H-J)/2)
860 LET J=J+(J=2*INT (J/2))
870 IF J<LEN D$-1 THEN GOTO 750
880 IF X$<D$(J TO J+1) THEN GOT
O 800
885 IF X$<D$(J TO J+1) THEN GOT
O 650
890 LET D$=D$+X$
900 LET XM=CODE C$(R)
910 LET YM=CODE C$(R+1)
915 IF LEN E$=2 THEN LET E$=X$
920 GOTO 270
930 IF LEN E$=4 OR RND<.5 THEN
GOTO 630
935 IF E$>" " THEN GOTO 940
938 LET E=INT (CN*.8)
937 LET E$=CHR$(INT (E/256)+CHR
$(E-256*INT (E/256)))
940 LET E$=E$+CHR$(INT (CN/256)
+CHR$(CN-256*INT (CN/256)))
    
```

```

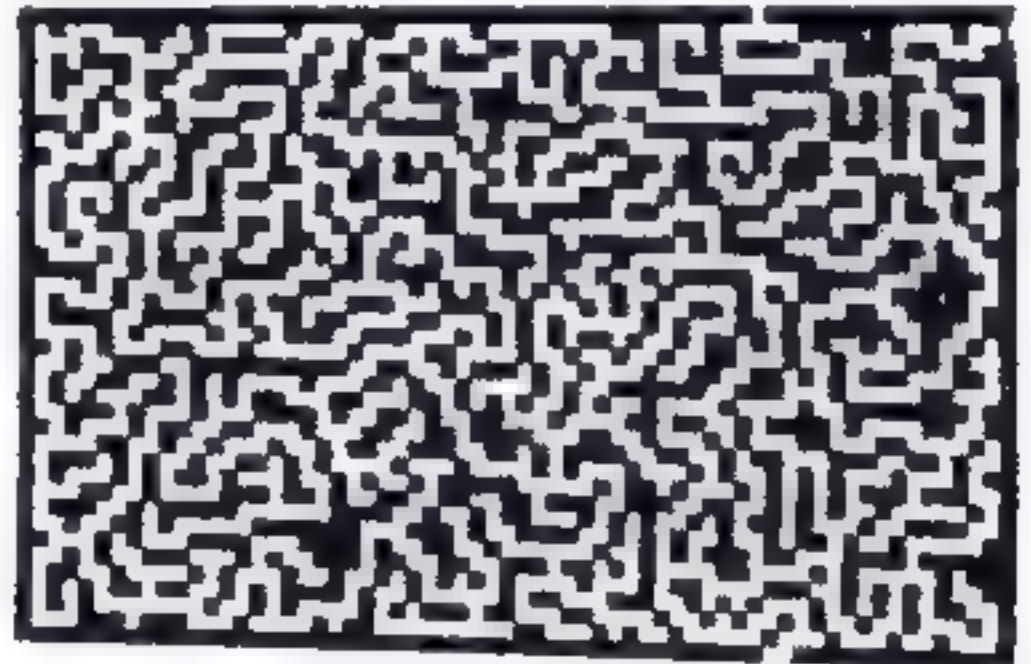
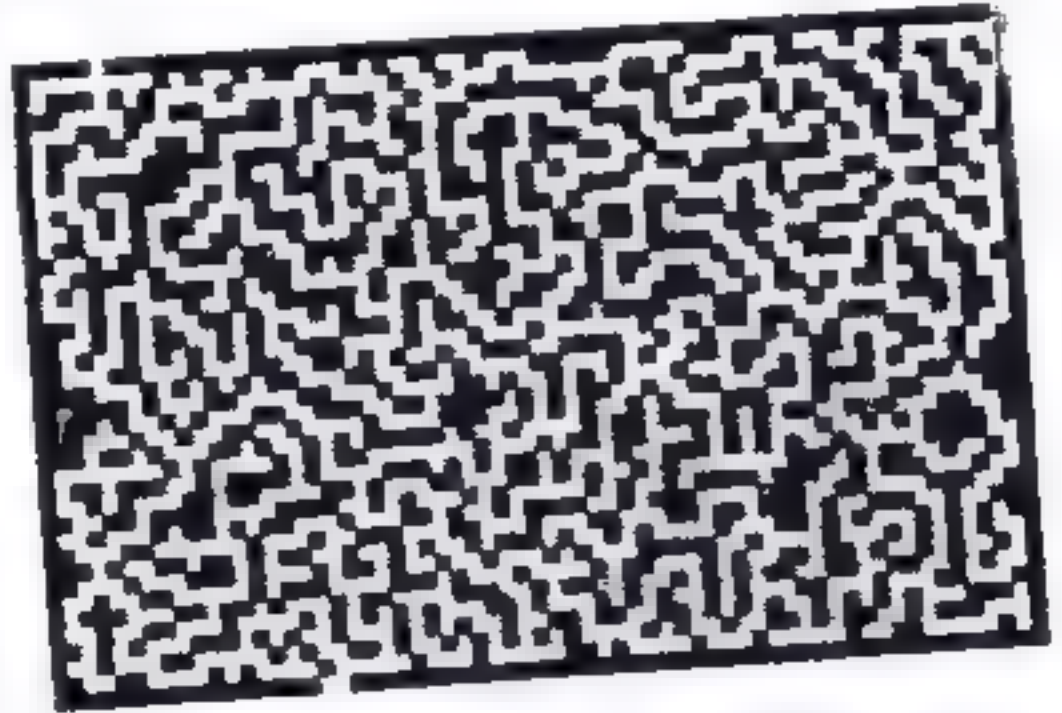
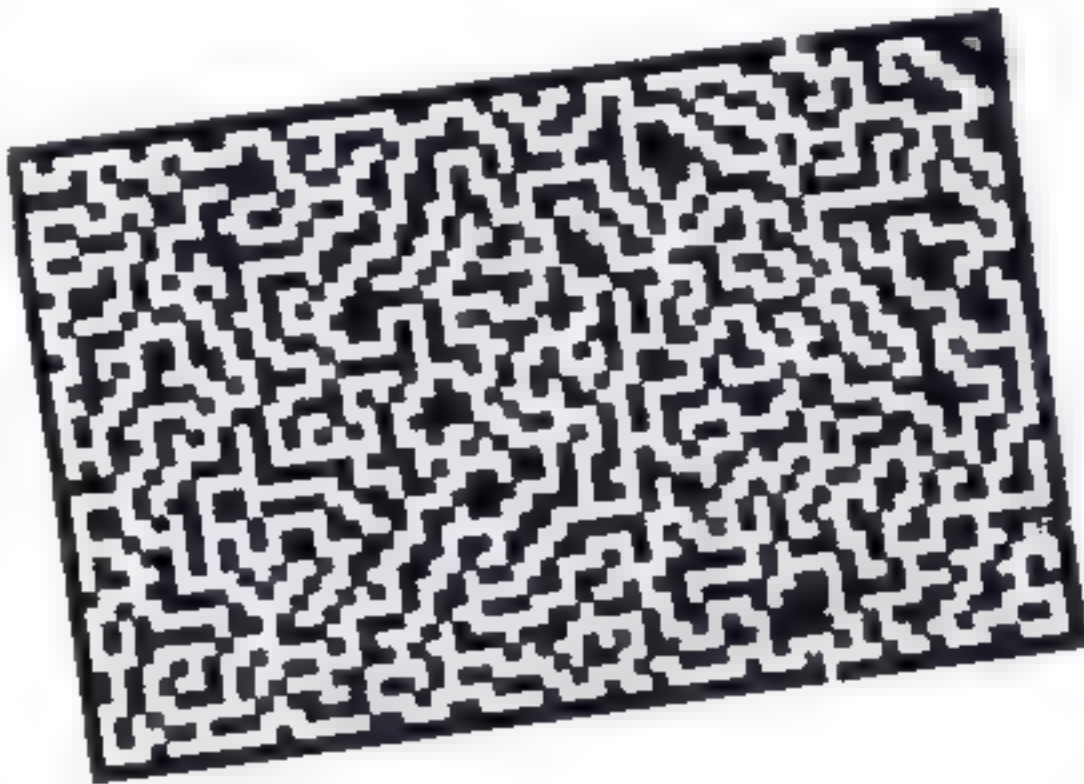
945 LET START=XM
949 GOTO 230
990 UNPLOT XM1,YM1
1000 IF INKEY$=" STOP " THEN PAU
SE 4E4
1001 POKE 16437,255
1005 IF LEN E$=4 THEN GOTO 1100
1010 LET X=INT (RND*53)+5
1015 LET START=X
1020 LET Y=41
1030 GOSUB 10
1040 IF NOT P THEN GOTO 1100
1050 UNPLOT X,Y
1060 LET Y=Y-1
1099 GOTO 1030
1100 DIM Z$(704)
1101 LET SAVE=1500
1102 COPY
1110 LET Q=PEEK 16396+256*PEEK 1
6397
1120 FOR J=1 TO 704
1130 LET Q=Q+1
1140 LET Q=Q+(PEEK Q=113)
1150 LET Z$(J)=CHR$(PEEK Q)
1160 NEXT J
1161 LET Y1=43
1162 LET Y2=0
1164 DIM C$(1)
1165 LET D$=""
1170 LET XM=START
1180 LET YM=43
1190 SLOW
1200 PLOT XM,YM
1210 UNPLOT XM,YM
1220 IF INKEY$="" THEN GOTO 1203
1221 IF INKEY$="3" THEN GOTO 993
1222 IF INKEY$=" STOP " THEN STO
P
1223 IF INKEY$="Z" THEN COPY
1230 LET D=(INKEY$="7")+2*(INKEY
$="6")+3*(INKEY$="5")+4*(INKEY$
="8")
1240 LET X=XM
1250 LET Y=YM
    
```



# ZX81 PROGRAMMING

```

1250 GOSUB 6
1270 IF P THEN GOTO 1200
1280 LET X=X+1
1290 LET Y=Y+1
1300 GOTO 1200
1310 PRINT AT 0,0,Z$
1320 GOTO 1200
1330 INPUT X$
1340 IF X$>"" THEN SAVE X$
1350 GOTO SAVE
    
```



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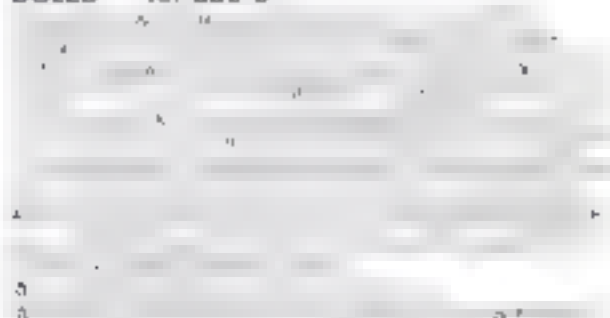


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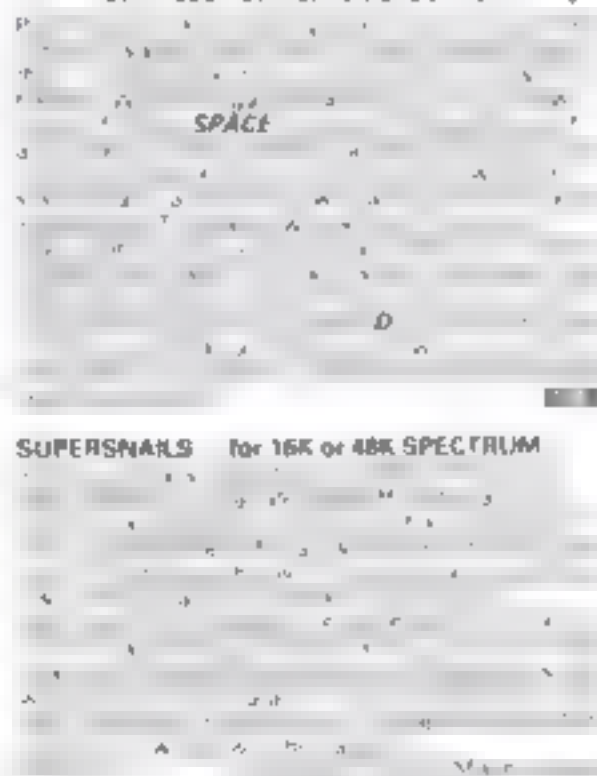


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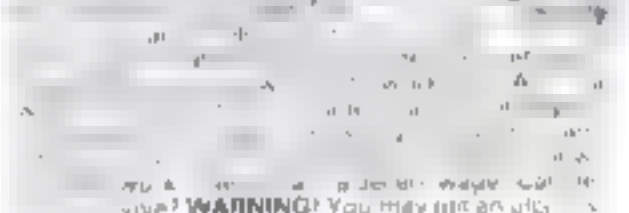


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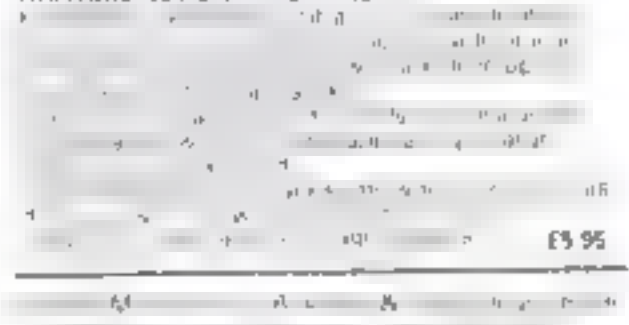
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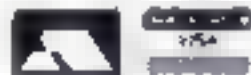
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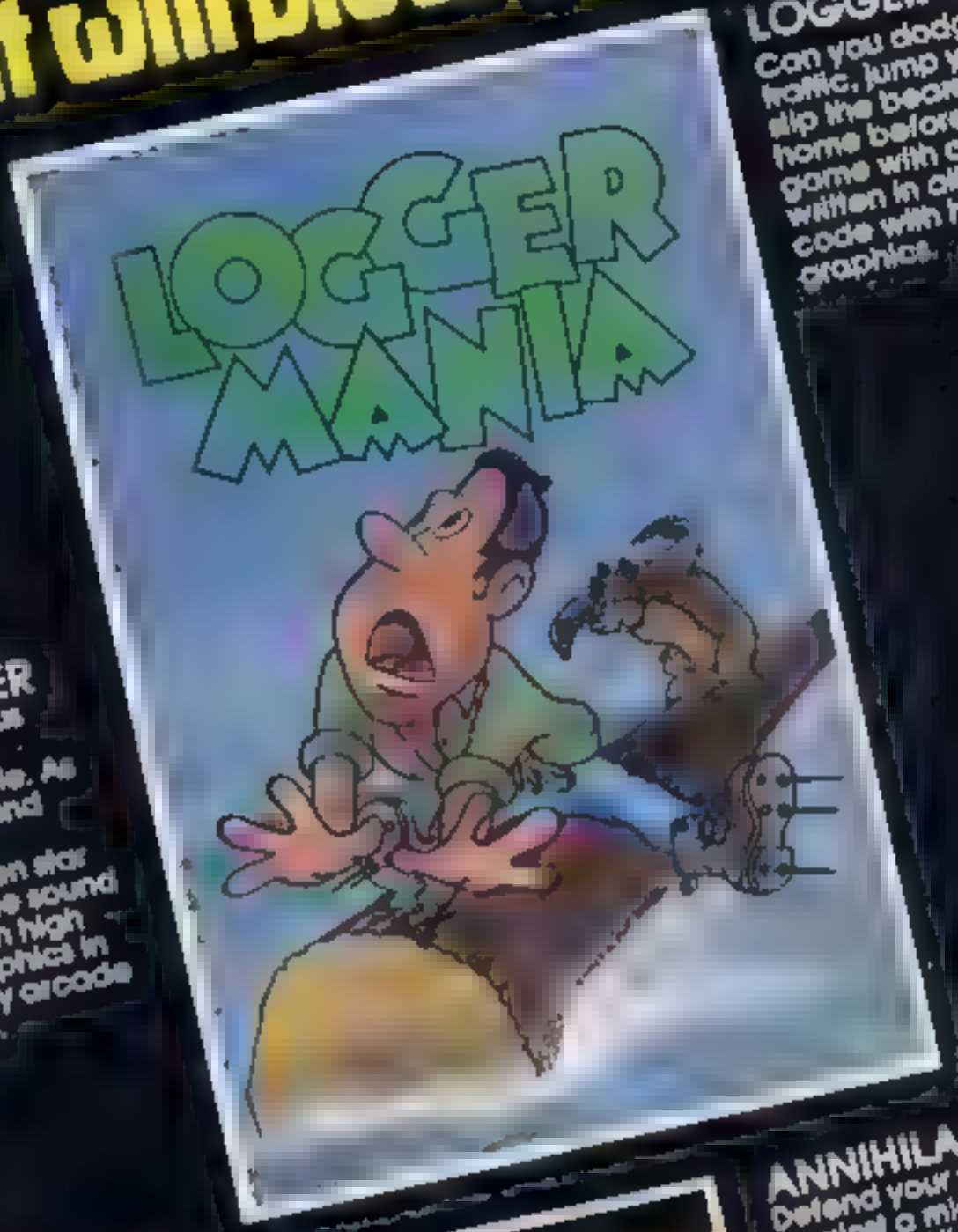
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## LETTERS

### Unhelpful assistants

Can you please explain why being the owner of a ZX81 makes you seem such a sort of freak in the eyes of shop assistants at the large computer centres that are jamming the computer band wagon?

The sheer mention of the ZX81 when you speak to one of these shop assistants makes them look down their nose at you and, at the end of any help you are likely to get — at least in Cambridge and Peterborough.

I am unemployed, and regret that by getting a cheap computer — after a lot of hard saving out of my own money — I could learn a program, which I did do, am now in the process of learning machine code.

In actual fact, all I seem to have done is give shop assistants a good laugh, except when they sold me the ZX81.

Is it wrong to learn computing instead of killing colourful Martians? I am not saying there is anything wrong with games, but be fair — I've had it. And remember that the ZX81 was once as popular as the Spectrum is now.

B. E. Smith, Huntingdon, Cambs.

*It's the shop assistant that are at fault, not you. As anyone who has had a lot of experience working on mainframe computers will tell you, the ZX81 is as powerful as machines that used to fill a whole room a few years ago. Even now that more sophisticated machines have come on to the market, the ZX81 is still an excellent way of learning programming if you're on a tight budget. Lastly, you can always point out to those assistants that it was the ZX80 and ZX81 that really opened up the market for low-cost home computing in this country — if it wasn't for their 'fals of computer shops' assistant would be in a bit of a bind.*

### Keyed-up over keyboards

I write to inform your readers of my personal award for the current most busy supplier of equipment. The company is Fuller and the supply of their FDS keyboard for the Spectrum.

I placed an order and sent my cheque to this company at the beginning of August.

At the end of that month I received an acknowledgment informing me that the object of my desire would be

**Send your letter to Letters, Home Computing Weekly, 145 Charing Cross Road, London WC2H 0EE. Don't forget to name your computer — the best letter could win £5-worth of software. Got a problem with your micro? We'll soon be starting a queries page, so send your technical questions to Queries at the above address**



a further 21 days before arrival.

At the time of writing (mid-October) I am still waiting. However that's not the whole story.

When the keyboard did not arrive on or near the given date I telephoned Fuller and was told by a gentleman that there had been problems with production and that I would receive it at the end of that week.

Two weeks elapsed and I again telephoned (this time I was a Frank Lawton who answered). "Sure, no problem they are going out this week. I'll put you at the top of the list."

The following week I spoke to a Miss McKenna. "There's been a problem with production. They are going out this week."

By this time I had noticed several advertisements in computer magazines with a whole list of dealers stocking these magazines with a whole list of dealers stocking these products and Fuller making claims for their excellent service.

I phoned two dealers, the first told me that the keyboards had not arrived yet and he didn't know when they would arrive and the second said that Fuller had made a mess of the dealer network and were scrapping it for the time being.

Confirmation of this would seem to be gained from the fact that the next rash of advertisements appeared without the dealer list.

I have tried on several occasions to speak to the managing director, a Mr Backhouse, but I am always informed that he is either not in yet or that he is out.  
**David B. Drury, York**

*Keith Archer for Fuller said: "We have had very extensive production delays with the keyboard. First the base of the case came out warped. Then there was a problem with the printed circuit board. Then we had a fire, in which the injection moulding tool for the keyboard was destroyed — that set us back two months. We didn't at first realise*

*how long the delays were going to be — we've been getting the same promises from our suppliers that we've been passing on to customers.*

*But now we're not quoting delivery dates. All I can say is that the old orders are now going out, very slowly — we're currently processing orders received in early July.*

### Private Lines revisited

While Andrew Turek's article *Private Lines* (HCW 31 Micro Tips) was very interesting, he is incorrect in stating that INPUT LINE 5 makes it impossible to use BREAK or STOP on the Spectrum.

If Mr Turek had studied his manual, he would have read that CAPS SHIFT and 6 stops the program from within an INPUT LINE statement.

Having said that, there will be many who do not know this (like Mr Turek), so the routine may be of use to some readers.

A further improvement would be to replace the NEW statement in line 10 with RANDIMIZE LSR 0. This will reset the machine completely, including LDCs and any machine code stored above RAMTOP.  
**Raymond Blake, Rayleigh, Essex**

### Small and Friendly

A year or so ago, from the advertisement for a small shop service in a small area, I only retail home computers, like Atari Commodore and Sinclair, so I decided to see if I could do a better job.

I was reading HCW review of Ranton's sale-leasing purchase scheme. As I was a small business, I had accounts I have considered a week or so. I have had a number of enquiries to the small business area and I have decided if it was a good idea, I would subsequently I sold a number of computers to my customers.

I think there's a big opportunity to be filled in the home computing market especially in the small business sector. I mean one man shops etc. that would benefit in time and expense from a type of system like this instead of having to pay about £2,000 for a normal business system.

**B. D. Howell**  
Busy B's Computers  
Rossendale Lancs.



**3 Deep Space  
32K BBC £7.95**

Poserll, PO Box 2, An  
doversford, Cheltenham, Glos  
GL54 5SW

I was really looking forward to  
this program. It loaded perfectly,  
so I donned my 3D glasses and  
waited for the 3D images to ap-  
pear.

The division comes from view-  
ing a red and a blue image  
through separate eyes, and the  
instructions say best results come  
from having as pure a red and  
blue as possible.

I thought my TV RGB  
monitor would be ideal but try as  
I might, I could not see a 3D ef-  
fect.

I plugged into the TV port but  
that was no better. I dragged  
friends and relatives in to see if  
they could see the effect.

couldn't see it either.

I tried another pair of glasses,  
I tried both pairs at once, I tried  
another TV set. I tried viewing  
from two to 10 feet. No 3D!

I read the setting-up instruc-  
tions several times and the only  
thing I didn't try was a TV with  
adjustable contrast.

The package talks say it should  
work but as we could see we  
were a red and a blue image.

The game itself varied quite a  
bit, chief attraction being the 3D ef-  
fect which would be marvellous.  
I'm sure, if it worked.

Do get a demonstration before  
buying. The ratings are based on  
my findings.

|                 |     |
|-----------------|-----|
| instructions    | 90% |
| playability     | 35% |
| graphics        | 20% |
| value for money | 70% |



**Flying Train  
Spectrum  
£3.99**

Random Records, 20 Cotton  
Road, Withington, Manchester  
M20

Chris Sievey's claim to fame was  
his novel idea of putting ZX81  
programs on a single.

Apparently he has now aban-  
doned the idea since his latest  
offering for the Spectrum ap-  
pears on cassette. Still he throws  
in a free single for you to play  
free with the game.

The game itself is one of the  
best I have played. It's good  
and according to the instruc-  
tions it is. It's only way to pre-  
pare for a view of a space nova  
through the window of a flying  
train.

As you may guess, getting the

train to fly, viewing a space  
nova and landing safely back on  
earth is not easy.

Your mission to the moon is  
split into various tasks. Firstly  
you must put the train together.  
To be honest I couldn't get past  
this screen, and so I cheated by  
altering the listing to suit myself.

After you have put the train  
together, you must navigate  
through a stargate which is  
supernova and then return safely  
to earth. Only then are you  
granted the full title of rail  
warrior.

|                 |     |
|-----------------|-----|
| instructions    | 90% |
| playability     | 55% |
| graphics        | 60% |
| value for money | 80% |



**Games with  
a difference**

Our reviewers try out some  
new games with new twists

**Purple Turtles  
Commodore  
64 £7.95**

Quicksilva, Palmerston Park  
House, 13 Palmerston Road,  
Southampton

This game from Quicksilva is  
very unusual and seems to be  
designed for the younger micro user,  
although it is quite addictive to  
play. You could describe it as a  
video game.

The subject of play is to gather  
up fruit which falls from trees  
on the opposite side of the river.

To cross the river, your man  
must leap over the backs of  
turtles which float on the surface.  
You must watch out, because the  
turtles may suddenly sink  
without warning, leaving you to  
a watery grave.

Each screen shows a  
number of each type of fruit  
which must be cleared within a  
time limit. As the game goes on  
the turtles sink more rapidly and  
sometimes all four sink.

The graphics in this game are  
superb, with clouds and birds  
floating on the skyline, and a  
strange cackling noise which  
comes from a tree on the riverbank.

Sound is also well used. A  
jazzy rendition of 'Merrily  
about on the river' heralds the  
start of each game.

As I said the game is  
designed for the younger user  
and after a few hours playing the  
game could be slightly tedious.

|                 |     |
|-----------------|-----|
| instructions    | 90% |
| playability     | 55% |
| graphics        | 70% |
| value for money | 90% |



**Stampit/Early  
Bird TI-99/4A  
£7.95**

Phoenix Software, 48 Rannock  
Drive, Mansfield, Notts

A fireman's nightmare, that's  
the only way to describe Stampit  
and Early Bird. They are not in the country  
in a minute when sparks from  
your campfire cause fires to  
break out all over the place.

With ever-increasing panic you  
race about trying to extinguish  
the fires by stamping on them  
with a very large boot that you  
just happen to be wearing.

Frustration increases as addi-  
tional fires break out, and tents  
and motor cars burst into flames.  
You're left with a sense of  
helplessness and a very unhelpful  
fire.

There are five levels of dif-  
ficulty, ranging from 'beginner'  
from indifferent through bud-

the second game, Early Bird  
is set in a typically English coun-  
try garden which is beset with a  
fairly nasty case of worms.

You move the early bird  
around the garden making a  
royal feast of the worms and try-  
ing to eat as many as you can  
without being caught by a  
runaway lawnmower, a lurking  
cat or the grand daddy worm.

You lose a life when caught  
and the game ends when your  
three lives have all been lost.

Both games are nicely  
presented, with instructions  
printed on a card.

|                 |     |
|-----------------|-----|
| instructions    | 80% |
| playability     | 80% |
| graphics        | 70% |
| value for money | 80% |



**Crunch  
TI-99/4A £7**

Bycwater, c/o 25, Hardys Dr,  
Aycliffe, Newcastle upon Tyne  
NE1 4PZ

The Cruncher is an interesting  
hero in this game, and the object  
is to move him through a set of  
four caves. Each cave is filled  
with dots which are eaten by the  
cruncher as he progresses.

In the far corner of the cave is  
a piece of cave castor, and bonus-  
points are awarded when this is  
eaten.

In order to pass from one cave  
to another, you must travel  
through the monsters mansion.

At this point, a rather un-  
friendly chap, reminding in the  
name of 'Orrible' Orris, appears  
on the scene, and his one aim in  
life is to chase and eliminate the  
cruncher.

If you fancy your chances you  
can try to collect a piece of fruit  
left in the mansion and gather ex-  
tra points in several ways.

The game is a bit of a puzzle  
and you will have to think  
about the Orrible Orris attack.

In addition to being eaten by  
'Orrible' Orris, or using the  
wrong doorway, the cruncher  
will be eliminated if he hits a wal-  
l or tries to retrace his steps.

Graphics are very good and  
sound effects, including a very  
catchy signature tune, are ex-  
cellent.

|                 |     |
|-----------------|-----|
| instructions    | 90% |
| playability     | 80% |
| graphics        | 70% |
| value for money | 80% |





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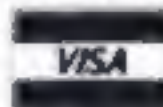
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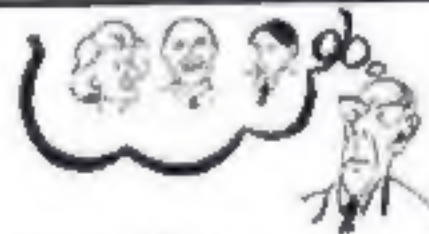


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